

Declassified effects of nuclear weapons and other threats, for minimising terrorist war propaganda

Proof-tested cheap civil defense makes nuclear deterrence credible to stop conventional war, avoiding massive casualties, reducing for tit-for-tat escalation. Attacks on civil defense in 1937 by the "Cambridge Scientists Anti-War Group" MAXIMISED CASUALTIES IN WWII (please READ this link; hyperlinks are in GREEN TYPE on this blog). Saving life in war, saves life in war: idealism doesn't

Saturday, January 17, 2015

Thermal radiation lies debunked

"*Crimestop* ... includes ... failing to perceive logical errors ... and of being bored or repelled by any train of thought which is capable of leading in a heretical direction." - George Orwell, 1984 (Martin Secker & Warburg Ltd, London, 1949, p. 220).

"If a man reads or hears a criticism of anything in which he has an interest, watch ... if he shows concern with any question except 'is it true?' he thereby reveals that his own attitude is unscientific. Likewise if ... he judges an idea not on its merits but with reference to the author of it; if he criticizes it as 'heresy'; if he argues that authority must be right because it is authority ... The path of truth is paved with critical doubt, and lighted by the spirit of objective enquiry... the majority of people have resented what seems in retrospect to have been purely matter of fact ... nothing has aided the persistence of falsehood, and the evils resulting from it, more than the unwillingness of good people to admit the truth ... the tendency continues to be shocked by natural comment, and to hold certain things too 'sacred' to think about. ... How rarely does one meet anyone whose first reaction to anything is to ask: 'is it true?' Yet, unless that is a man's natural reaction, it shows that truth is not uppermost in his mind, and unless it is, true progress is unlikely."

- Sir Basil Henry Liddell Hart, *Why Don't We Learn from History?*, PEN Books, 1944; revised edition, Allen and Unwin, 1972

In 1952, Birmingham firemen made a model of their city on a 144:1 scale and simulated a nuclear fireball with a powerful lamp at the appropriate scaled height of burst for 20 kt at 600 feet. Unlike Hiroshima, where most of the houses were low, 1-2 storey wooden ones with paper screen, easily blast-overturned charcoal braziers, and bamboo furnishings, over 50% of the buildings in Birmingham were completely shaded by a relatively small number of tall concrete or steel framed office buildings usually with fire sprinkler's in them, thus preventing a firestorm and debunking what Stanbury who had been at the Operation Hurricane nuclear weapon test after dealing with incendiary fire research in WWII, in August 1962 called the television utterances of "renowned academic scientists who know little about fire" (George R. Stanbury, OBE, "The Fire Hazard from Nuclear Weapons", *Fission Fragments*, August 1962 issue 3, UK National Archives HO 229/3; more data is in his report CD/SA 121 aka HO 225/121). Stanbury notes that on 20-22 July 1958, the Liverpool fire authority launched the secret *Torquemada Study* of nuclear fire risks from 10 megaton H-bombs. Stanbury concludes: "When the figure of 1 in 2 [houses initially ignited for intense firestorms like Hamburg] is compared with the figures for initial fire incidence of 1 in 15 to 30 obtained in the Birmingham and Liverpool studies, it can only be concluded that a nuclear explosion could not possibly produce a fire storm." (CD/SA 121, linked here in summary extracts form, with comparisons to Hiroshima and Nagasaki and nuclear weapons tests.)

Only a small fraction of buildings had any thermal flash induced fire, and even those that did were only ignited on the uppermost stories in the curtains of windows facing the fireball with a direct unimpeded radial line. Such fires on upper floors *did not spread downwards* (because nuclear bombs don't dump thousands of tons of aviation fuel into the building like the 9/11 aircraft attackers). Heat rises upward, sets off fire sprinklers and that kills all mad theories of firestorms and nuclear winters of soot clouds. It is dangerous complacency to believe that lies will keep you safe from nuclear attack by saving you from realistic thinking. That's what people like money exploiting H.G. Wells thought in the 1930s, when mixing up gas war hysteria with science fiction in his evilly pseudoscientific and scare mongering, money making, war-mongering 1936 pro-Nazi-appeasing film *THINGS TO COME*. This egotistical, narcissistic, lying, propaganda based, money-making, war mongering film by political Marxism nutcase H. G. Wells (remember the 1939 Hitler-Stalin Pact to jointly invade Poland, before claiming that a dictatorship like the USSR which murdered 40 million in the 30s was beautiful and different from the Nazis who murdered 6 million in the 40s) promoted gas war hysteria at the time in 1936 the Nazi threat could still have been stopped without the deaths of 40 million people including 6 millions Jews gassed not on the streets by gas bombs but in Nazi-collaborator and French Medical Nobel Laureate, eugenicist Dr Alexis Carrell's so-called civilized gas chambers for ethnic cleansing of political troublemakers and Jews, prejudiced all subsequent civil defence in Britain, *leading to appeasement and crap civil defense against high explosives etc.* The same effect occurs with nuclear hype for propaganda by Hollywood: dishonesty that causes needless war suffering is rewarded by Nobel Peace Prizes, money, book contracts, film contracts, billions of screaming fans, Nazi Rallies of groupthink fanatics who scream Hitler-style against the truth, against facts, and against humanity, and are rewarded richly by politicians.. (The best *Torquemada Study* data summary is in the misleadingly-titled obfuscating report *Some effects of fallout on the operation of mobile fire columns*, SA/PR 62, UK National Archives HO 227/62.)



All of the policies and arguments on nuclear weapons and civil defense are wrong if the foundations of those arguments and policies are made of false premises. It's propaganda of the worst sort to go on spluttering that we're constructing arguments when we're publishing factual news. We're deliberately not constructing theories, but merely pointing out proved facts. The only arguments

or theories are those being constructed by "critics" who don't want to engage with the facts, just to speculate in ignorance about the motivation of the messenger! Better propaganda would look at the facts we're giving and try to find a plausible sounding dismissal of them, instead of ignoring them. However, it's useful to reveal who the real nutters are, and how many money-making biased charlatan professionals are included in their ranks:



1979 U.S. Office of Technology Assessment, "The Effects of Nuclear War" deceptions

Table 14.—Long-Term Radiation Effects From Nuclear Attacks

Estimated worldwide^a effects from 1-Mt air burst over a city (OTA Case 1):

Somatic effects	
Cancer deaths	200 - 2,000
Thyroid cancers	about 700
Thyroid nodules	about 1,000
Genetic effects	
Abortions due to chromosomal damage	100 - 1,000
Other genetic effects	350 - 3,500

^aMost worldwide fallout would be in the Northern Hemisphere

Above: false LNT radiation scaremongering

Figure 1.—Vulnerability of Population in Various Overpressure Zones

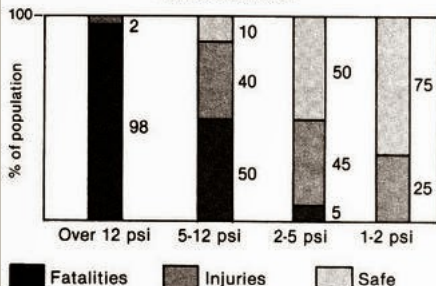


Table 4.—Casualty Estimates (in thousands) (1 Mt on Detroit)

Region (mi)	Area (mi ²)	Population	Fatalities	Injuries	Uninjured
0-1.7	9.1	70	70	0	0
1.7-2.7	13.8	250	130	100	20
2.7-4.7	46.5	400	20	180	200
4.7-7.4	102.6	600	0	150	450

Exaggerated thermal burns table "arbitrarily" assumes 6.7 cal/cm² is lethal and 3.4 cal/cm² hospitalizes.

This was not true even for light clothing in Hiroshima and for bigger yields even more heat is needed! Skyline shadowing protects over 90%.



Damage to unreinforced brick house (5-psi overpressure)

Above: false house collapse (Apple-2 test house after manually demolished!) photo. In fact, outer walls exploded but 1st floor did not collapse at 5 psi, and outward debris motion reduced hazard!

Exaggerated blast effects table ignores modern city concrete buildings which resist blast collapse

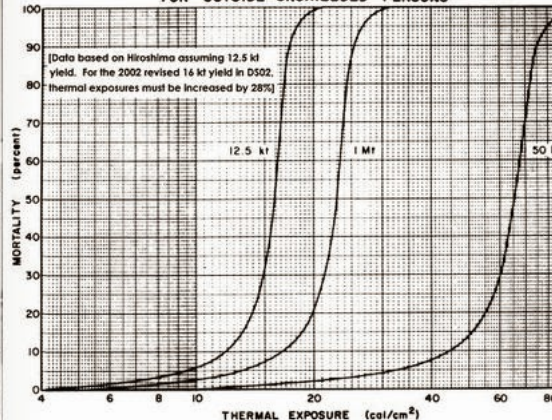
Table 5.—Burn Casualty Estimates (1 Mt on Detroit)

Distance from blast (mi)	Survivors of blast effects	Fatalities (eventual)		Injuries	
		2-mile visibility	10-mile visibility	2-mile visibility	10-mile visibility
(1 percent of population exposed to line of sight from fireball)					
0-1.7	0	0	0	0	0
1.7-2.7	120,000	1,200	1,200	0	0
2.7-4.7	380,000	0	3,800	500	0
4.7-7.4	600,000	0	2,600	0	3,000
Total (rounded)		1,000	8,000	500	3,000
(25 percent of population exposed to line of sight from fireball)					
0-1.7	0	0	0	0	0
1.7-2.7	120,000	30,000	30,000	0	0
2.7-4.7	380,000	0	95,000	11,000	0
4.7-7.4	600,000	0	66,000	0	75,000
Total (rounded)		30,000	190,000	11,000	75,000

These calculations arbitrarily assume that exposure to more than 6.7 cal/cm² produces eventual death, and exposure to more than 3.4 cal/cm² produces a significant injury, requiring specialized medical treatment.

L. Wayne Davis, Donald L. Summers, William L. Baker, and James A. Keller, Prediction of Urban Casualties and the Medical Load from a High-Yield Nuclear Burst, DC-FR-1060, The Dikewood Corporation

PROMPT-THERMAL MORTALITY CURVES FROM SURFACE BURSTS FOR OUTSIDE-UNSHIELDED PERSONS



Shirt protection: Nagasaki

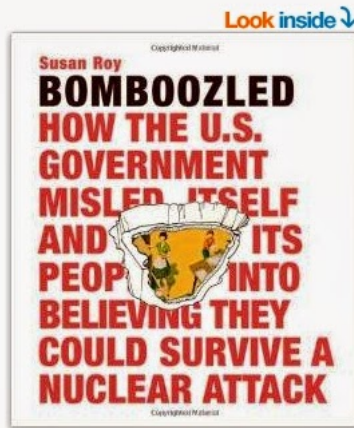
Uniform protection: Hiroshi



PROTECTION AGAINST RADIANT HEAT. This patient (left) lies from ground cover when the rays struck him from the left against back frame.

Above: Hiroshima soldier on (1946 USSBS report on Hiros

Above: deluded propaganda debunked. It's not being debated, just ignored. Democracy doesn't work when debates are "closed down" by scare-mongering fanatics who use fear and superstition today in the same way it has always been used, to intimidate the ignorant into accepting a political dogma which is not based on the facts, the relevant facts, and the whole truth. Who cares about the truth?



Bomboozled: How the U.S. Government Misled Itself and Its People into Believing They Could Survive a Nuclear Attack Hardcover – April 16, 2011

by [Susan Roy](#) (Author)

★★★★★ 7 customer reviews

Conceived by a misguided government seeking to quiet the fears of an anxious public, the concept of the Family Fallout Shelter was Cold War paranoia at its finest, a massive bit of propaganda by architecture that has no more truth behind it than the absurd notion of duck and cover. Inundated with government-sponsored films, posters, booklets, traveling caravans and exhibitions, the American family bought into the idea, investing millions of dollars in home shelters of every conceivable material and design. *Bomboozled: How the U.S. Government Misled Itself and Its People Into Believing They Could Survive a Nuclear Attack* lays bare the buried truths of America's family fallout shelter obsession. Author Susan Roy charts the panic-fueled evolution of the shelter from a well-stocked basement pantry to a full-fledged (and often completely decorated) home addition, revealing through extensive archival photography, nuclear-era memorabilia, and previously unpublished media, a government and people in the grip of self-delusion. Fastidiously researched and sharply written, *Bomboozled* captures the absurdity and uncertainty of a culture that knew no better than to trust its government's message. Susan Roy is a writer and editor on architecture, design, and cultural history. The founding managing editor of *Allure* magazine, she has also held senior editorial positions at *This Old House*, *SELF*, *Good Housekeeping* and *Avenue*. She holds a master's degree in architectural history from Columbia University; *Bomboozled* is loosely based on the subject of her master's thesis, *The Family Fallout Shelter During the Cold War*.

PLASTIC SHEETING & DUCT TAPE

The Cold War officially came to an end on Christmas Day, 1991, when Soviet President Mikhail Gorbachev signed the decree that brought the existence of the U.S.S.R. to an end. The war between the Superpowers was over.

Now, twenty years later, we continue to live with the fearsome legacy of that conflict: the nuclear bomb. The Ploughshares Fund, a foundation whose goal is the elimination of all nuclear weapons, estimated last year that the United States has 9,600 nuclear weapons and Russia has 12,000, and that 2,200 of these weapons in both countries are on "high alert"—ready for use at short notice.

We are living with another legacy of the Cold War: the government policy of "emotion management." After the Sept. 11, 2001, Al Qaeda terrorist attack that killed nearly 3,000 people, Americans were bewildered, confused, upset, uncertain, and frightened—just as they were in the early years of the Cold War, after the U.S.S.R. developed its atomic bomb.

In an attempt to calm the fears of Americans, the George W. Bush administration delivered messages straight out of the 1950s Civil Defense playbook. It acknowledged the threat and the possibility of an attack, just like the 1950 Civil Defense film, *Survival Under Atomic Attack*. Then, it told citizens to "be prepared" by

assembling a three-day supply of food and water, a battery-powered radio, and a change of clothes.

A few months later the White House introduced a color-coded "terror alert" system to advise Americans about the relative level of threat. The five-level color-coded scale went from "low risk" (green), up to "severe risk" (red). It was every American's job to be aware of the nation's "threat level," but exactly what they were supposed to do was unclear. Critics argued that the alert system was merely a political tool created to scare Americans into supporting the Bush administration's War on Terror, including its controversial invasion of Iraq. On February 7, 2003, citing classified intelligence reports, President Bush raised the terror alert level from "elevated" to "high." A panicked nation sought guidance. What could Americans do to protect themselves?

In the event of a biological, chemical, or "dirty bomb" attack, Homeland Security Secretary Tom Ridge told citizens they should go inside a designated "safe room" in their home, and cover all vents, doors, and windows with plastic sheeting and secure it to the walls with duct tape. Ridge's announcement alarmed Americans and set off a national run on plastic sheeting and duct tape. Stores were sold out within days. His recommendations also provoked outrage and ridicule. New York City Mayor Michael Bloomberg called them "preposterous." Television comedian Jay Leno cracked, "This means the only people who are going to survive an attack are serial killers. Who else has duct tape and plastic sheeting in their car?"

Chastened by the criticism, the administration shifted its tone. On February 19, 2003, Secretary Ridge introduced a Civil

Defense-style preparedness program called the Ready Campaign. "Today, America's families declare: We will not be afraid and we will be ready," Ridge said. "Make a kit! Have a plan! Get informed!"

The Ready Campaign, the terror alert system and the safe room, like the 1950s Civil Defense programs that preceded them, are all examples of "security theater," a phrase coined by security expert Bruce Schneier in 2006 to describe a measure that creates an illusion of security without actually providing any protection. To respond to public demands for increased airport security after 9/11, the federal government created the Transportation Security Administration (TSA), which nationalized airport security functions. Tens of thousands of security screeners were hired and a dizzying panoply of equipment was installed at a cost of billions of dollars a year. Meanwhile, uninspected traffic, cargo and people moved freely through the nation's ports, train stations, and highways.

Suspecting that the TSA was nothing more than a very elaborate form of security theater, in 2008, Jeffrey Goldberg, a writer for the *Atlantic*, decided to test the system. In an article called, "The Things He Carried," Goldberg detailed the prohibited items he brought through TSA checkpoints, all of which went undetected by screeners, including pocket knives, lengths of rope, bottled water, and a box cutter. He was even able to board a plane using a fake boarding pass, without a photo I.D., while wearing an Osama Bin Laden t-shirt!

So next time you are at the airport, enduring a hands-on "pat-down," or standing barefoot inside a full-body scanner, you might ask yourself: Is this keeping us safe, or are we merely being bomboozled all over again?

OPPOSITE This illustration of a "shelter-in-place" came from the Federal Emergency Management Agency (FEMA) website, www.ready.gov. When warned of a nuclear, biological, or chemical attack, a citizen is directed to go inside one room of his residence and cover all vents, windows, and doors with plastic sheeting and duct tape to seal out contaminants. It is the modern-day equivalent of the family fallout shelter.

www.amazon.com/Bomboozled-Government-Believing-Survive-Nuclear/dp/0982358571,

Above: Susan Roy's 2011 book *Bomboozled* falsely claims that fallout radiation can't be stopped by simple shielding and that **simple plastic sheeting and dust tape - the scientific evidence for which we published on internet archive in August 2012** - which a year later could have saved hundreds of lives in the 21 August 2013 Ghouta suburb sarin nerve gas attack during the Syrian civil war, after windows were blown by explosive blast, are somehow ridiculous. **She simply omits the scientific evidence proving the use of duct tape and plastic sheeting.** She also **ignores the WWII British evidence from conventional and nuclear attacks for cheap improvised civil defence lifesaving effectiveness even if houses are completely flattened beside a crater, which again are useful for conventional war.** At some point, people will have to stop falsely ridiculing and laughing at needless suffering, and to stop political propaganda about bringing sides together that want to kill one another, and start saving civilian lives with affordable, quick, cheap civil defence, while wars burn themselves out. Sophistry in this situation requires a sick sense of humor, deserving only a slow handclap. We should censor out this drive, and permit publication of the truth: the relevant incontrovertible facts.

3. THE WATER COLUMN AND THE CLOUD

3.1. Water was first observed from H I emerging from the fireball at an angle of about 60° to the horizontal after about 0.1 seconds, Fig. 3.1. Its height above sea level at this stage was about 650 feet and its vertical component of velocity was 350 feet per second.

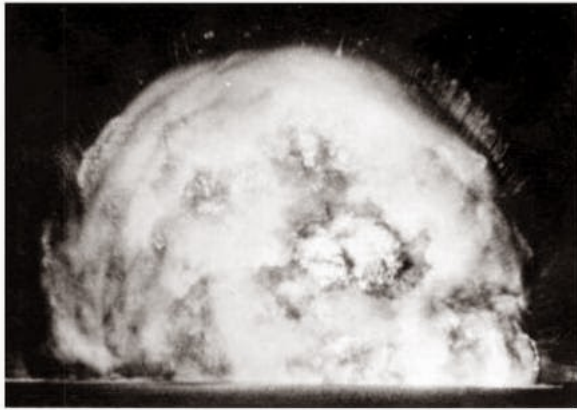


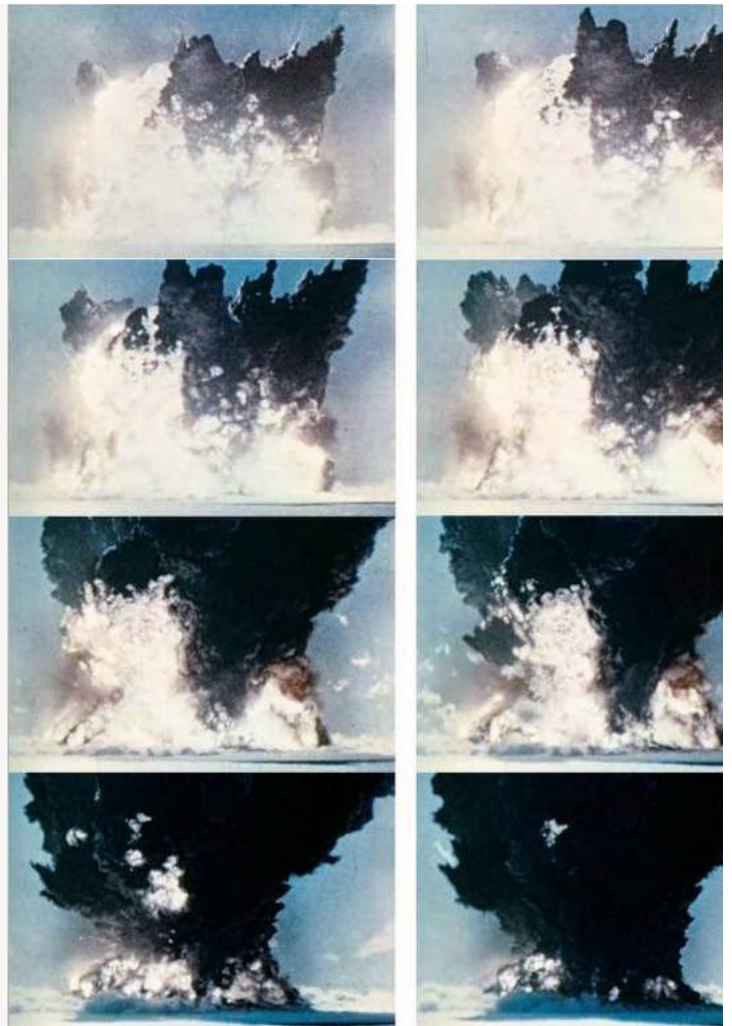
Fig. 3.1, 0.1 second. Water plumes begin to emerge from fireball due to the underwater bubble expansion and cratering.



Plumes of mixed water and black ferrous oxide from ship emerge at 1-2 seconds from the top of the fireball, which cools and fades out at 3 seconds. Last photo is at 5 seconds after burst.

3.2. Fall-out commenced from the side of the column but this did not spread far and was probably not important. The more widespread fall-out came from the bottom of the cloud and fell with an initial velocity of about 65 feet per second reaching sea-level at about 1 minute after the explosion, Figs. 3.8 and 3.9, and continuing for at least ten minutes.

3.4. The top of the cloud rose very roughly as $t^{\frac{1}{3}}$ having a height of about 1,800 feet at 1 second and reaching a maximum of about 10,000 feet at 4 minutes, when its ascent was substantially stopped by a temperature inversion.



Add caption

Russian nuclear weapons tests effects summary for civil defence use

This two-part document, originally titled "Historical Analysis of Atmospheric Nuclear Effects on Experimental Animals during Early Nuclear Tests, Part One and Part Two" (Logachev and L.A. Mikhalikhina, Sarov; Moscow, 1996), describes the effects on animals of atmospheric nuclear weapons tests performed by the Soviet Union at the Semipalatinsk Site. Part 1 describes the air blast and thermal radiation effects. Part 2 covers the effects of primary (prompt) radiation and secondary (fallout) radiation on the test subjects. It also covers combined radiation injuries, defined as a combination of radiation and non-radiation injuries. Several different animal species were used. Animals were emplaced at varying distances from the explosion's epicenter, and in a variety of terrain configurations (open ground, terrain oriented parallel and perpendicular to the blast, etc.) The protective effects of shielding by different military vehicles and buildings were also studied. The types, degrees of severity, and clinical course of illness from the injuries produced were carefully studied in order to understand the pathogenic mechanisms of injury and the likelihood of efficacy of proposed treatment measures. This document also covers special organ effects such as flash blindness and retinal burns. Even though these data are now over fifty years old, many of the conclusions derived from their analysis are useful today in terms of protecting humans from injury and affording good medical treatment of injuries incurred from detonation of a nuclear weapon.

Extracts from: V. A. Logachev and L. A. Mikhlikhina, *Animal Effects from Soviet Atmospheric Nuclear Tests*, ITT Corp., Alexandria, VA. ADA485845, March 2008 (PDF linked here). The Soviet Union exposed 8,000 animals (40% of these were sheep) in various structures, vehicles, open and shadowed positions, to nuclear explosions in order to assess the effects in different situations, and to different combinations of thermal and nuclear detonations. Instead of simply giving the straightforward data on effects from specific nuclear tests, the data is presented only as having been combined into three categories of yield range. However, it is still an important report.

In this summary, we have edited out "chaff" to enable attention to be focussed on the useful data contained in the report. The "chaff" we have excluded includes general, non-quantitative, descriptions that convey no useful information for civil defence, or information that is only relevant to the high conditions of the nuclear test, i.e. an unobstructed desert with no buildings or city skylines to shield the effects of the thermal flash on the ground from the initial nuclear radiation flash. We have excluded initial radiation data since no doses or radiation spectra are given in the report, just a list of radiation sickness to various kinds of animals. This is of no use to civil defence, because the shielding of neutrons and initial gamma rays from a nuclear structure is dependent on the type of radiation (neutrons, or gamma rays), the amount of scattering it has undergone when passing through the structure (which reduces its energy, making shielding easier) and the weapon design (fusion of tritium and deuterium releases 14.1 MeV neutrons, which are more penetrating in comparison to the mean 1.1 MeV energy neutrons from fission).

The information given on blast and thermal effects from the single documented high yield 400 kt low altitude burst on open terrain and in and around vehicles is of particular value since the report allows the relative life-saving shielding factors due to the various locations of sheep etc to be compared, and comparing the mortality rates. For a comparison of the Russian and American data on protection from thermal flash by clothing, see <http://glasstone.blogspot.co.uk/2009/08/thermal-radiation-pulse-shape-and.html>

See also https://archive.org/details/Anderson_shelter as well as <https://archive.org/details/BritishNuclearTestOperationHurricaneDeclassified> and <http://archive.org/details/TheEffectsOfTheAtomicBombOnHiroshima>

Update (25 January 2015): Radiating temperatures of fireballs in US and British nuclear tests

There's a new paper published by Robert C. Slaughter, Tyler R. Peery and John W. McClory, "Two-dimensional analysis of nuclear fireball film," *J. Appl. Remote Sens.* 9(1), 095096 (Jan 20, 2015).

Abstract. Researchers at Lawrence Livermore National Laboratory have begun digitizing technical films spanning the atmospheric nuclear testing operations conducted by the United States from 1945 through 1962. Each atmospheric nuclear test was filmed by Edgerton, Germeshausen, and Grier, Inc., using between 20 to 40 cameras per test. These technical films represent a primary source for advancing the knowledge of nuclear weapon output as well as the understanding of nonnuclear high-temperature gases. This manuscript outlines the process followed in order to perform two-dimensional temperature calculations for early time nuclear fireballs using digitized film. The digitized optical densities of the film were converted to irradiance on the film that was then used to determine an effective power temperature. The events Wasp Prime and Tesla of Operation Teapot were analyzed using this technique. The temperature results agreed within uncertainties with historic data collected by calorimeters. Results were also validated by comparison to a thermal heat flux solution that utilizes thermal yield values to normalize radiant flux. Additionally, digital imaging and remote sensing image generation was used to demonstrate that the two-dimensional temperature calculations are self-consistent.

"Using the process outlined in the preceding section, two-dimensional temperature was determined for the test shots Wasp Prime and Tesla. A mean temperature was then determined for each film. ... The total radiance across the entire film sequence was expanded at later times assuming that the log linear radiant flux decay was constant after ~ 0.5 s to extend out to 20 s, thus ensuring nearly all thermal energy is accounted for. Utilizing this approach, Wasp Prime was determined to have a thermal yield of 1.4 kt. The thermal yield of Wasp Prime is 1.6 kt.⁹ Tesla was determined to have a thermal yield of 2.6 kt. The historical quoted thermal yield of Tesla is 2.5 kt.⁹ Both results agree well and provide further supporting evidence that temperature calculations determined by the two-dimensional power method are consistent with historical data."

The formerly secret report on the 25 kt ship-burst British Operation Hurricane nuclear test of 1952 and films of the crater engulfing the fireball at the Maralinga Marcoo site test, *Buffalo-Round 2*, led to an interesting passage in the 1956 **Manual of Civil Defence, v1, Nuclear Weapons on how the fireball cools the fireball, lowering the radiating temperature and resulting in more easily attenuated infrared radiation.** Using the Planck distribution, at 6000 K averaging radiating temperature in a typical air burst (or for sunlight on a clear day), you get about 45% of the thermal energy as visible radiation, 45% as infrared, and 10% as ultraviolet (most of which is quickly absorbed by the ozone smog created from oxygen by the intense initial gamma radiation just after the fireball). For a surface burst where the cratering ejecta cools the fireball to a mean radiating temperature of around 3000 K within milliseconds, you get about 45% thermal radiation in the infrared, 10% in the visible band, and next to no ultraviolet emissions. However, as the weapon yield increases, the radius of the crater increases as a weaker power of yield than the fireball radius at final thermal maximum, so the crater has less effect on shielding the fireball from the thermal radiation. **The thermal yield therefore varies from 4.5% for a 1 kt surface burst to 17% for a 10 Mt surface burst.** The traditional approach in Glasstone's book ignores this physical mechanism and is therefore grossly misleading when nuclear terrorist attacks of low yields in cities are evaluated, even neglecting the **Hiroshima shielding effects of modern tall concrete buildings.**

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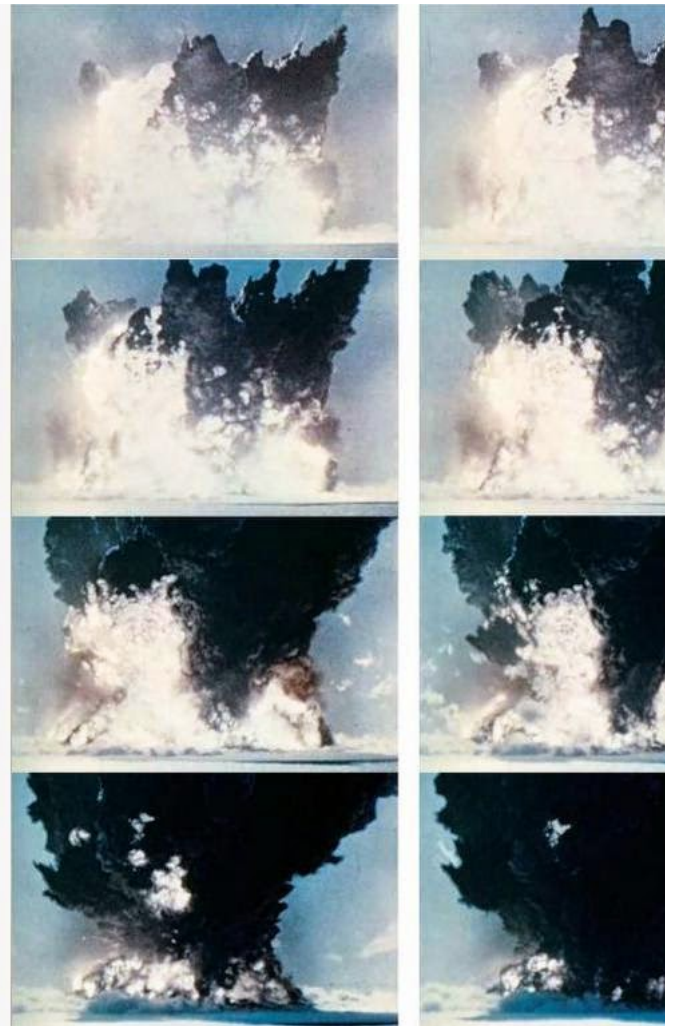
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Above: <https://archive.org/details/BritishNuclearTestOperationHurricaneDeclassifiedReportsToWinston>

Harold L. Brode

The RAND Corporation, Santa Monica, California

This paper was prepared for presentation at The Tripartite Technical Cooperation Panel Meeting, Panel N3, held at the Joint Fire Service College, Dorking, England, 5-9 October 1964. The papers are to be published by Defense Atomic Support Agency.

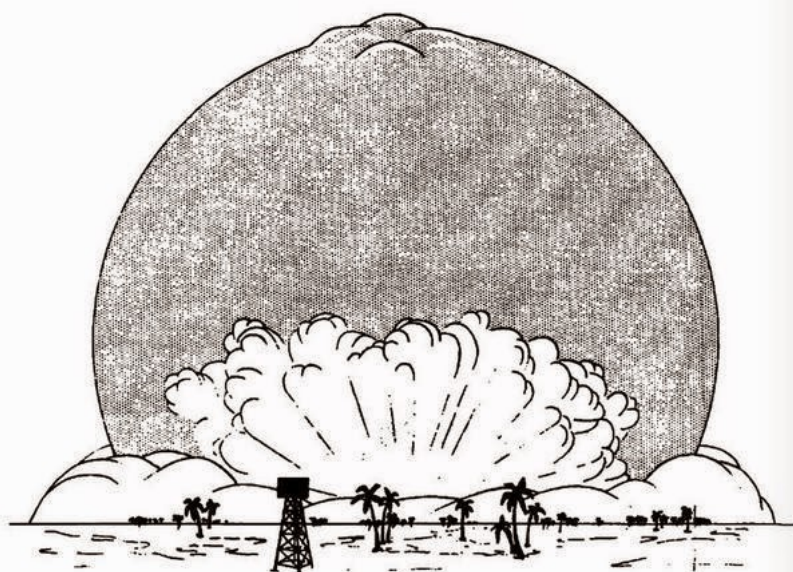
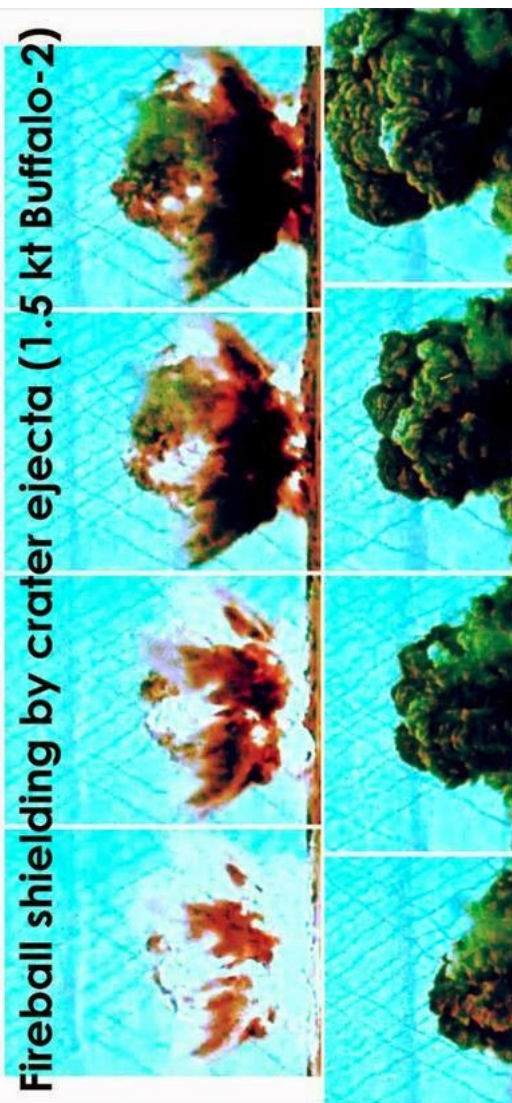


Fig. 20—Surface burst features influencing thermal radiation

Fireball shielding by crater ejecta (1.5 kt Buffalo-2)



Above: <http://archive.org/details/TheEffectsOfTheAtomicBombOnHiroshima>

UPDATE (12 February 2015):

One little brainwave on this subject: since Stefan-Boltzmann radiation law means that the peak thermal power is proportional to the T^4 , it follows that if the thermal pulse shapes of burst are roughly similar in shape and duration (which we'll now assume to be so, "as a first approximation"), then the total thermal yield radiated by the fireball is proportional to the absolute (Kelvin, not C) temperature of the fireball. Thus, suppose an air burst gives a thermal yield of 35% of the total yield and radiates in a spectrum equivalent roughly to a 6000 K then it follows that a 1 kt surface burst with a thermal yield of only 4.5% (see above post for a link to the source of this figure) would have an effective radiating temperature equal to $6000[(0.045/0.35)^{1/4}] = 3593$ K. So the figures seem to survive a quick back-of-the-envelope check for self consistency.

However, when you look at the photos you can see that the reality may be a bit more complex. Jets of crater ejecta and surface vapor blow-off are cooling the fireball, but it is not. Some hot areas of the fireball are less affected, because by chance they are missed by crater ejecta and dust for an appreciable time during which thermal radiation is being emitted. Fireballs are not only cooled by dust but are completely blocked from vision by dense plumes of earth thrown up which absorb all of the thermal radiation from that sector of the fireball. Non-uniform mixing is thus to reduce the thermal yield, without reducing the *effective* radiating temperature as much as the Planck law would predict, because of statistical bias: the fireball is also most likely to be completely shielded by plumes, thus contributing nothing whatsoever, while the "hotspots" in the fireball (which presumably remain near the air burst until engulfed with dirt) are the main source of thermal radiation and are biased towards higher Planck temperatures!

There are some curves of air and surface burst thermal spectra in the Northrop EM-1 summary book: Figure 6.19, Effect of altitude on spectral distribution in a 1 kt air burst, and a Planck radiating temperature of 5000 K (i.e. 0.4 microns predominant wavelength) for a 1 kt air burst, and a Planck radiating temperature of only 2000 K (1.1

wavelength) for a 1 kt surface burst. For further details, see also Joel D. Johnson, "A Sensitivity Study of Thermal Radiation Fluence from a Nuclear Air Burst," AD data on the radiating temperatures and thermal yields of Nevada air bursts see also A. Guthrie and R. W. Hillendahl, "Operation UPSHOT-KNOTHOLE. Project 8.10. Physics of Thermal Radiation from an Atomic Bomb Detonation," ADA995203. For vitally important comparison tables of the measured thermal yields and effective fireball temperatures for yields including the 10.4 megatons Mike shot, measured by spectroscopy at American nuclear weapons, both air and surface bursts, see tables 1 Streets, "Basic Characteristics of Thermal Radiation from an Atomic Detonation", AFSWP-503, AD0327945. Streets finds (on page 3) that a 20 kt free air burst has a that the thermal yield for an air burst is $0.44W^{0.94}$ kilotons, where W is total yield in kt. In other words, as you go to higher yields, the longer duration of the thermal pulse allows mixing to set in, cooling the fireball by convection and cutting down the role of radiative cooling (i.e. thermal radiation). This is borne out by the fact that to get the DELFIC first-prize size model to match empirical data, Norman and others found they needed to supply one empirical correlation factor, namely that 45% of the energy of a nuclear explosion ends up in cloud convection process!

That's a lot of heat energy ending up *not as thermal radiation but as hot air*; convective cloud! Much of it of course is hot air left behind by the blast wave at very high overpressures still indicates that Glasstone's nuclear effects energy partition "pie graph" in chapter 1 of *The Effects of Nuclear Weapons* is phoney. If 45% of the energy of a nuclear explosion is in a mushroom cloud, then that 45% of the energy is unavailable for starting fires, causing blast damage, etc. Glasstone has oversimplified everything where more clarity is desperately in need. A copious detail on trivia which is totally irrelevant for civil defense (American spelling, "civil defence" for UK).

Streets finds that the average air burst color radiating temperature is 6000 K, and that a surface burst has an average radiating temperature of 3000 K (page v). E.g., from her table George 214.5 kt tower shot test of 1951 at Eniwetok Atoll was measured to have a thermal yield of only 39 kt, about 18% of total yield which is roughly what Glasstone and Dola same table, you see that the 1952 10 megaton Mike test gave thermal yields of 16.5%, 15% and 17.3% as measured by the Naval Research Lab (NRL), the Naval Radiological Institute and University of California at Los Angeles (UCLA), respectively, an average of 16% thermal yield for the 10 megaton Mike surface burst from three independent radiation spectra however recognises (on page iv) that surface bursts (or low tower shots) below 250 kt yield produce a much smaller thermal yield fraction than higher yield surface bursts. Streets Naval Research Lab (NRL) measured a thermal Planck spectrum temperature of 3000 K for the Greenhouse-George nuclear test, 2600 K for 10 megaton Mike (note that UCLA Mike thermal spectrum giving a color temperature of 2900 K), while the 500 kt King air drop gave a fireball side-on temperature spectrum of 3300 K measured by NRL, as compared 5250 K as measured by an aircraft flying overhead when the bomb detonated. The toroidal shape of the fireball after a couple of seconds means that the thermal radiation is a function of which you look at the fireball. Looking straight down on a nuclear toroidal fireball from above, you get exposed to the full whack of thermal transmission, the maximum possible air sideways on, you obviously get to see an area of the toroid which is π (e.g., 3.14 approximately) times smaller because you're seeing a fireball area equal to the diameter of a hollow thickness, whereas looking down from below, you see an area of fireball equal to the circumference of a circular hollow ring multiplied by its thickness. The difference between the

See also High E. DeWitt, *A Compilation of Spectroscopic Observations of Air Around Atomic Bomb Explosions*, LAMS-1935, Figure 4 for the spectrograph of the 18 April test at 0.1 millisecond, showing the absorption bands in the thermal radiation spectrum caused by nuclear smog consisting of ozone (due to initial gamma rays in air near the fireball) (due to the blast wave at very high overpressures). This "nuclear smog" is useful in absorbing shorter wavelengths like ultra violet rays, thus reducing the problem to civil defense!

For the sake of completeness, a good formula for the shape of the thermal radiation power-versus-time graph (final or main pulse), improved from a simpler idea by Hal Brode, is:

$$P/P_{\max} = [3(t/t_{\max})^2] / [1 + \{0.7(t/t_{\max})^3\} + \{1.3(t/t_{\max})^4\}]$$

(Harold Brode's original formula is: $P/P_{\max} = [2(t/t_{\max})^2] / [1 + \{(t/t_{\max})^4\}]$ which is easier to remember but less accurate.)

One other thing. The declassified DASA-1251 fallout data volumes contain a lot of data on fireball maximum sizes and the times of those maximums (obviously, fallout in an air burst the fireball can expand down to the ground before buoyancy sets in and carries it upward). If you tabulate all that data with declassified yields for the tests, you find that the data corresponds to a time for the final thermal maximum equal to $0.0361W^{0.48}$ seconds, where W is yield in kt. This is closer to the 1957 and 1962/4 editions of Glasstone's Effects than it is to the 1977 edition's formula $0.0417W^{0.44}$ seconds. Both formulae coincide (simultaneous solution) at 36.8 kt yield. There is an explanation for the confusion in the 19 and Dolan on the thermal flash times formulae, to be had in Dolan's 1978 revision of the chapter on thermal radiation in "Capabilities of Nuclear Weapons", EM-1. Basically, Dola two-volume EM-1 was to move nuclear effects predictions away from empirical data summaries and into the age of computer simulations of nuclear weapons effects. So during the Vietnam war had crippled all research funds, lavish efforts were made to produce computer simulations of all nuclear effects and then to proof test the models against actual nuclear weapons instead of getting nuclear effects data from plots of test measurements on graphs, you would get the effects data straight from computer simulations, safe in the knowledge that the computer is fully verified using nuclear test data to confirm their accuracy! Unfortunately, this failed significantly for thermal radiation because computing power in the 1970s limited the number they could use (a one dimension fireball model is fine while a fireball is a perfect sphere, but not useful for a toroid, as we have discussed above!), and also the mesh size was too coarse to be modelled properly (discontinuities are introduced, causing instabilities and messy results).

Brode gives a discussion of much of this research in his 1968 nuclear bombs effects simulation paper in the Annual Review of Nuclear Science, v18, pp 153-202. With regards to you need 3-dimensional models that include the hover time to buoyancy and the conversion of the spherical fireball into a convective torus or toroid, which turns itself inside out as it rises copiously in this way by convection. If you ignore the toroid effect, your computer model exaggerates the thermal radiation danger and also produces an inaccurate graph of the shape for high yield explosions, at some seconds after burst. It's for this kind of reason that I'm very suspicious of old 1960s and 1970s declassified theoretical research papers being put out in appreciation of empirical data reports from actual nuclear tests! You can't go very far wrong with 1950s nuclear test reports. Some of the equipment they used is now in museums and multiple groups independently measured effects on the same tests to ensure that they didn't succumb to groupthink methodology errors or silly mistakes. It's also far more important instruction to be able to look at an actual H-bomb test like 10 megaton Mike, and discuss how its effects have been falsely exaggerated for propaganda by fascists or Marxists who are catering to the media's addiction to sci-fi of the pretentious, narcissistic "Pacifist do gooder" variety which starts world wars by appeasement as demonstrated clearly in the 1930s. The rats of Engebi just 3 miles from ground zero, contrary to the out of context misquotation by Chuck Hansen and his friend Richard Rhodes who - at the very least - didn't bother to check of the source book, Neil O. Hines' "Proving Grounds", where Hines concludes that the rats were found to survive and thrive on fallout radiation. Not exactly the populist front page story for CND fascist liars and friends of Stalin to hype out. They *want* doom-mongering to build pseudoscientific "education" in lies that cause wars. They profit from wars. They're those who want to stop wars and suffering in war. They are and they know they are evil people who are ignorant and refuse to learn, think, or do anything realistic that works, prefer points by groupthink socialist chanting and abuse of genuine progress and true innovation. And the "freedom of the press" defends their lying and promotes it.

The figures of 3000K and 6000K effective radiating temperatures (for giving the Planck law thermal radiation spectral distributions) from surface bursts and air bursts, respectively, November 1957 Technical Manual TM 23-200, "Capabilities of Atomic Weapons", plus a more technical detailed discussion in the **July 1957 U.K. Home Office Scientific Advisory Committee declassified UK National Archives document HO 228/21, "Report of a course given to university physics lecturers at the Civil Defence Staff College 8-11 July 1957 and their effects; blast from nuclear weapons; thermal radiation..."** Alan G. McDonald's restricted classified paper in that report is on thermal radiation, and discusses the effect of temperature in a surface burst upon the thermal radiation spectrum, i.e., increasing the proportion of infrared radiation, which is more easily absorbed by city water vapour (most city humidity or more due to proximity to a river, lake, ocean, etc due to ancient trade by boat reasons, unlike the deserts where nuclear tests were conducted in the USA and Australia hence the "Encore effect" in the Nevada in 1953 is not representative of city fire ignition!). The restricted paper in that report on blast is by Frank H. Pavry, who surveyed Hiroshima

of the British mission to Japan in 1945, after spending WWII in British air raid shelter design (see the previous blog post for details of Pavry's work in the civil defense research and department headed by Morrison shelter inventor professor Baker). Pavry reproduces the early blast height-of-burst curves and discusses the precursor effect, neither of which are in the 1957 edition of Glasstone's Effects of Nuclear Weapons (which excludes the precursor - *ironically all anti-nuclear propaganda films about nuclear weapons love to portray nuclear weapons as low air bursts over dark sand as if they are somehow representative of nuclear weapons over concrete cities, which they are not* - and only gives data for free air bursts, and Hiroshima scaled air bursts). Pavry also gives a formula for peak overpressures from a 1 kt free air burst based on empirical data: peak overpressure ($\text{psi} = 0.0001 \times (R/1000)^{-2.4}$), where R is distance in feet from a 1 kt free air burst. The report also contains an entertaining introduction by the then head of the UK Home Office Scientific Advisory Committee, competent wartime weaponeer Dr R. H. Purcell, and it is clear that the advanced effects data is based on the exchange of reports with America since February 1954, plus British reports from the Pacific War, including Hurricane, Totem, Mosiac, Buffalo, Antler, etc.

CENSORSHIP OF FASHION AND GROUPTHINK DOGMA TO ALLOW DISCUSSION OF OBJECTIVE FACT!

We need censorship of lies not facts, and not censorship on the basis of fashion, political "groupthink" bias. Emotional subjectivity always triumphs over scientific objectivity in groups (this is the essence of what is called professionalism, which means the business of technology or exploiting science to make money, rather than actually doing science). Acceptable criticisms in science are camouflaged by unwarranted praise, so that nobody ever loses face. In this way, the lessons aren't learned, but are buried behind firewalls in journals restricted from public access, or else published as obscure.

The **previous post** touches on the key problem for civil defense. Most people want war left to the military, and war prevention left to the secret security services or ideologues, de facto. When trying to get attention for the facts which should speak for themselves, the standard response is extremely paranoid and deluded: it amounts to claiming falsely that we lie that we are making an argument, which could be presented differently. However, what we want to do is precisely what we are doing, namely calling attention to certain facts because they are (a) important and (b) taboo or widely unknown. In other words, this blog is primarily a news media, presenting verified facts that are not available elsewhere. That's its point. There is no propaganda on the subject, only of vital facts.

Shooting the messenger because the message is delivered in the wrong tone is missing the point, the message itself.

The real problem is, it turns out, not publishing the facts but getting past the evil thugs who censor facts that harm lies from "free debate". In Nazi Germany, everyone was "free" to speak the truth, but only if it was in line with the official line. Dissenters were persecuted, imprisoned, and killed. In fact, if you made a big enough effort to throw filth over the windows of dissenters and Jews, you might even be rewarded or treated with respect than before. For the real mad thickos out there: let me struggle to make this point really clear: "freedom" is NOT measured by how you are treated when you speak the truth. It is measured by what happens when you are trying to say something factual that isn't YET fashionable. Got it? I hope that's crystal clear. That doesn't proudly put up posters encouraging the murder of Jews, but in some ways the fact that so much evil duplicity is COVERED UP makes it even harder to see the truth. Deaths being done by the manipulation of grain prices by Polar Bear Icesheet-obsessed groupthink Nazis who refuse to enter scientific debates over the percentage of CO2 which is natural, the errors due to excluding cloud cover's negative feedback on the CO2 injection, etc. We live in a world which claims it is objective and claims it is free speech, but is corrupted and dishonest and doesn't, choosing to add a long list of "exclusion clauses" to the definition of free speech in order to ban any real free speech where it really matters in the interests of a defunct "precautionary principle" which states that censorship of objective facts is vital to prevent the world will end to the risk of allowing free speech to "confuse people" instead of keeping them, fed with biased crap", and this same attitude dismisses anyone who tries to argue for a subversive or a "complacent person who is putting at risk the natural world." Godwin's law is then used to try to close down any effort to point out from historical precedents the dangers that always occur when a pseudoscience like EUGENICS or AGW climate dogma is turned into a fu*king religion!!

The same inversion of morality occurred with the Soviet Union and other dictatorships, where there was complete freedom to criticise Ronald Reagan and Maggie Thatcher as being evil. It is never said that dictators are adverse to criticisms, they merely want the right people to be criticised. That's kind of obvious to me, but sadly it's beyond the grasp of most of the people who think that free speech is something that should never be used to criticise status quo. Well, once you prevent criticisms of the Queen, the Prime Minister, the President, and Bob's U.S. dictatorship. Being "free" to criticise what you're *told* to criticise is hardly free debate. Yet so many people fall into that, because of their love of groupthink social parties, fitting in, earning the praise of higher up's, or not being "black balled" when trying to join the club. Once you order people to speak in a given tone of voice, or to write in a certain style, you have coercion against true individuality and against free independence. Instead of shooting the messenger, we should address the message regardless of the messenger or whether the messenger is in the back of an old envelope, or printed in the most expensive journal. Too often journalism becomes corrupted into censoring out efforts to expose popular mythology. Once you defend itself by shooing messengers, know that you are dealing with evil liars, quacks and charlatans, not real scientists. You're, in short, dealing with professional money-making before morality, objectivity, freedom, ethics, humanity. Until the eugenicists/pseudoscience charlatans are driven out of powerful positions of journal editorship, media advisers, political science will be able to accelerate at the rate needed to safeguard human lives from terrorism.

To debunk the myth that no honest politicians are around who want to stop suffering using civil defense, see [Nigel Farage's article linked here](#),

Let charity begin at home with a civil defence corps

POLITICS is all about priorities. In an ideal world we would all like to be able to spend unlimited funds helping everyone who is in need. ...

We used to have just such a civil defence arm but it was abolished by Harold Wilson back in the 1960s – another era when a silly consensus had taken hold that suggested left to the state.

But why not use the expertise and goodwill that exists among private citizens by giving them a local place to go to offer their services and find out how they can help?

The old civil defence corps performed sterling service in the aftermath of the Aberfan colliery disaster, the Lewisham rail crash and other post-war emergencies.

If David Cameron really believes in a Big Society then what is he waiting for? ... I know the fact that Britain's own Disasters Emergency Committee has ruled out a fund for flood victims ... Diverting some of the £11billion (soon to be £12.5billion) foreign aid budget to helping the many thousands of Britons who have been devastated by flood is not just an obvious step but a moral imperative.

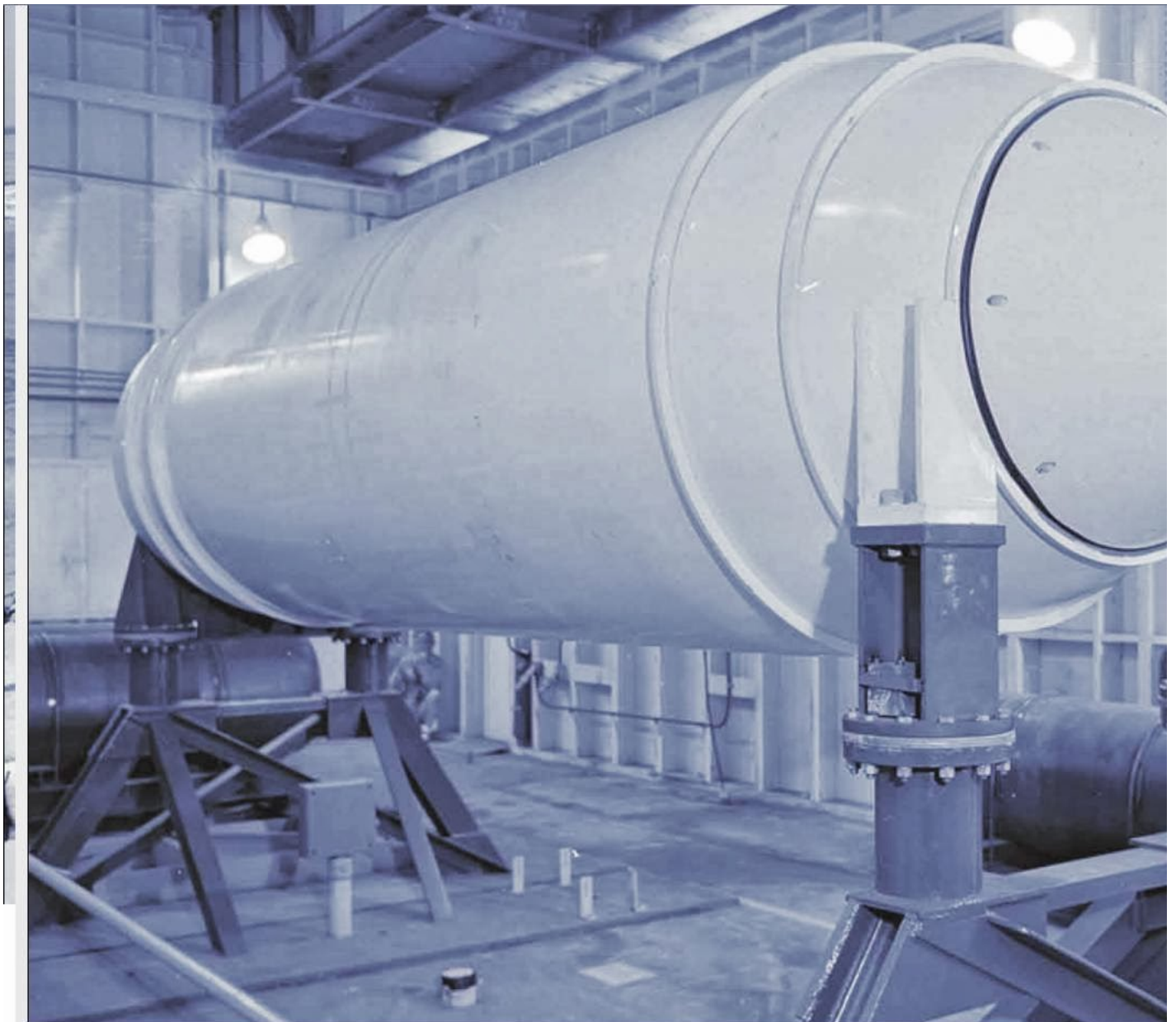
And to say so is not to ignore the plight of millions of people in developing countries. ... In fact aid spending overseas is notoriously inefficient and widely regarded as corrupt. It cements in place corrupt regimes.

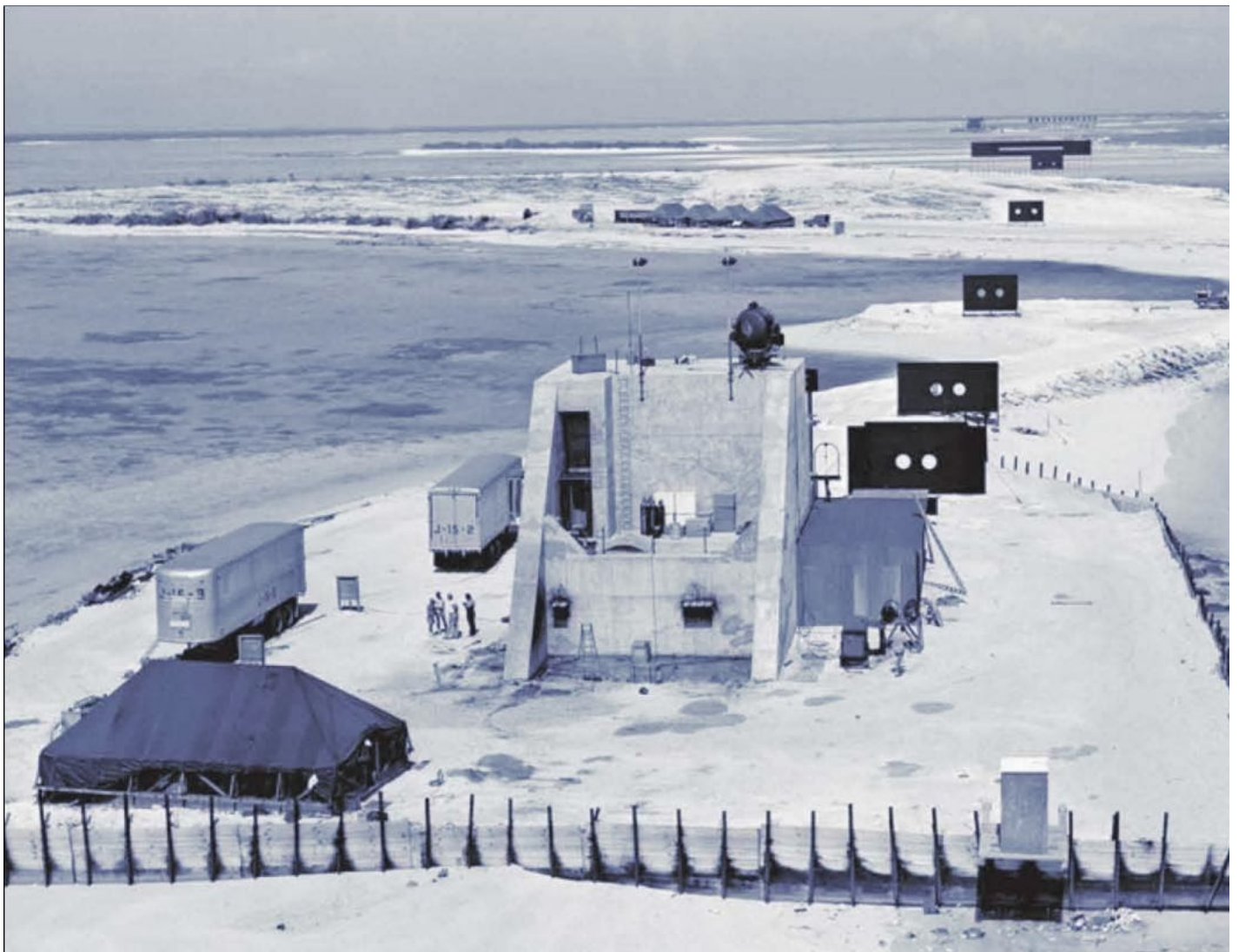
What we do know for sure is here in Britain just a few weeks' worth of the international aid budget spent on the home front could make a massive difference. ... And the Europe could do on that score would be to scrap the EU's tariff barriers and open up its markets.

With a proper civil defense corps, we could send civilian shelters and rescue over seas to deal with war victims, handing out and setting up clean water wells, shelters and other emergency survival aid, instead of making problems worse by pouring trillions of our debt into foreign dictator's swiss bank accounts in the European Union of Soviet Socialist Republics. Instead of being so allegedly hated by socialists and communists, we could export REAL HELP. But nobody seems to want it. They just want to accept British money while allowing their problems to grow so they can milk us some more. Funny how "socialists" and "communists" always end up loving money so much they get addicted to it, losing sight of the real problems altogether, and especially attacks on all realistic solutions to the problems, which are proved to actually work (unlike money to dictators).

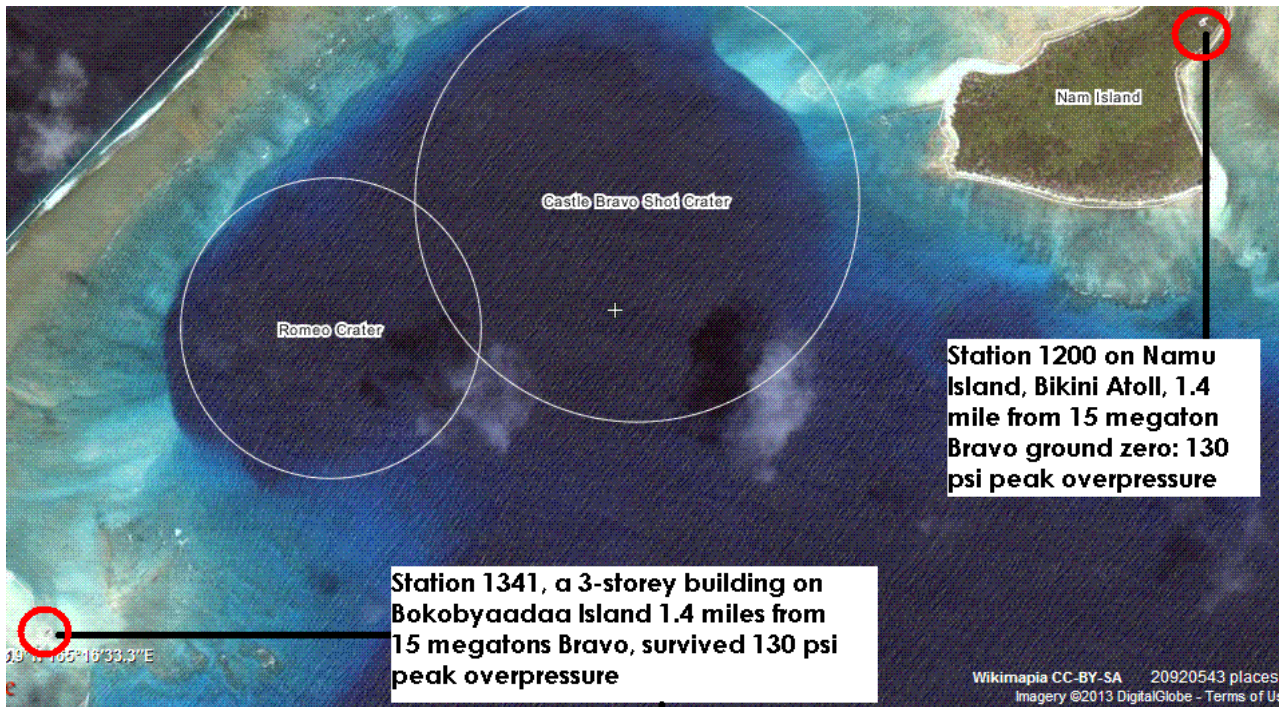
On a related theme, the BBC's Adam Curtis, who in 1992 transmitted a ignorant poppycock attack on Herman Kahn's civil defense policy to make nuclear weapons credible conventional war aggressions in Europe and elsewhere, called "Pandora's Box: To the Brink of Eternity", has just been granted permission by the BBC to have his new attack and the West in general hosted continuously for the entire year of 2015 on the BBC's iplayer site! (Normally you have to watch the programs on iplayer within just 7 days. The attack on the West is called, suitably, "Bitter Lake", "a new, adventurous and epic film that explains why the big stories that politicians tell us have become so simplified that we can't live longer". Curtis argues that the West has oversimplified things and thus been misled into invading Afghanistan like Russia in 1979. However, while I'd agree that much of the TV media has reduced detailed technical debate to oversimplified soundbites, with the true alternative ideas being sunk off the radar because they sound too complex to explain in a 3 second soundbite on TV, I think with its laid back approach to the clock is moral while the hardworking West is immoral. Afghan tribes for centuries have been getting their dose of excitement out of life by fighting wars, stress or bureaucracy or "games" like football. That's why the East always fights war like a game of strategy, seeking to exhaust the West financially, spiritually, morally. It doesn't make sense. The Middle East has always been polluted by the poppy drugs like heroin, also cannabis etc., and that's one strong reason why only strong religions like Islam prove capable of keeping it sane there. Christianity fails as weak.

I mean, with the war events unfolding in corrupt Russia and the Middle East, how on earth can Curtis be excused for seeing evil *only in the West*? While I have *little* sympathy for the poor billionaire dictator Putin in Russia, and for the dupes who are burning people to death in cages in Syria, I think there must be a LIMIT to how much sympathy nutters who do or support evil need to try to understand evil in order to try to defend ourselves from it, but that's not the same as being understanding towards evil, let alone helping it to continue doing what it wants to do. Adam Curtis is similarly limited. What really intrigues me about him and the rest of the BBC, the money spinning professional media, educational/scientific establishment, etc., is what they are thinking? Nothing probably! They let the people who make TV programs do their thinking for them, and those people are as corrupted by power according to Lord Acton's rule as Hitler or what people WANT TO HEAR and they KNOW THAT CATERING TO THAT PREJUDICED GARBAGE WILL MAKE THEM RICH. (THAT MARKS THE END OF ALL "THOUGHT PROCESS" point; time to switch on TV and soak up groupthink fashionable dogma!)

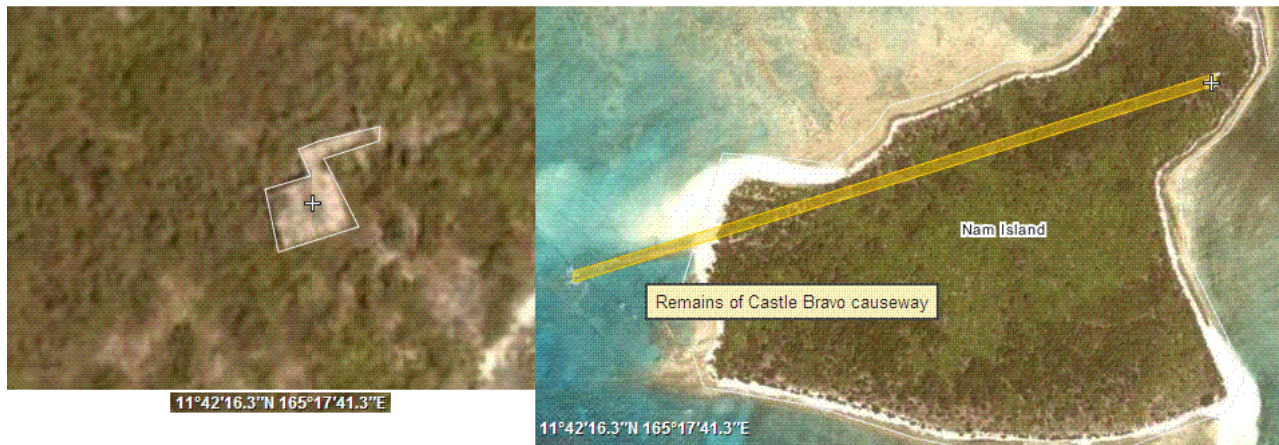




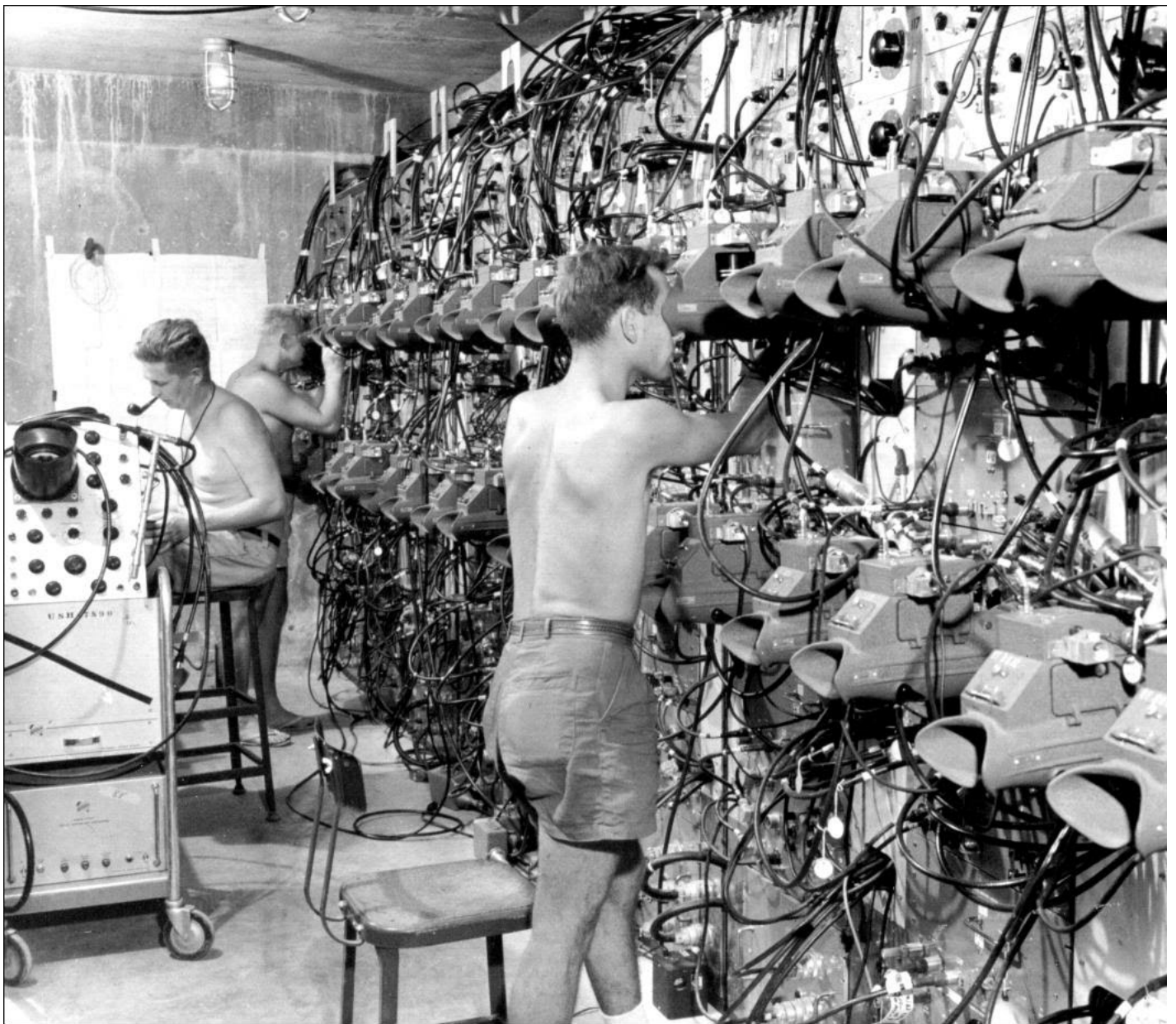
Looking from above-ground concrete building toward



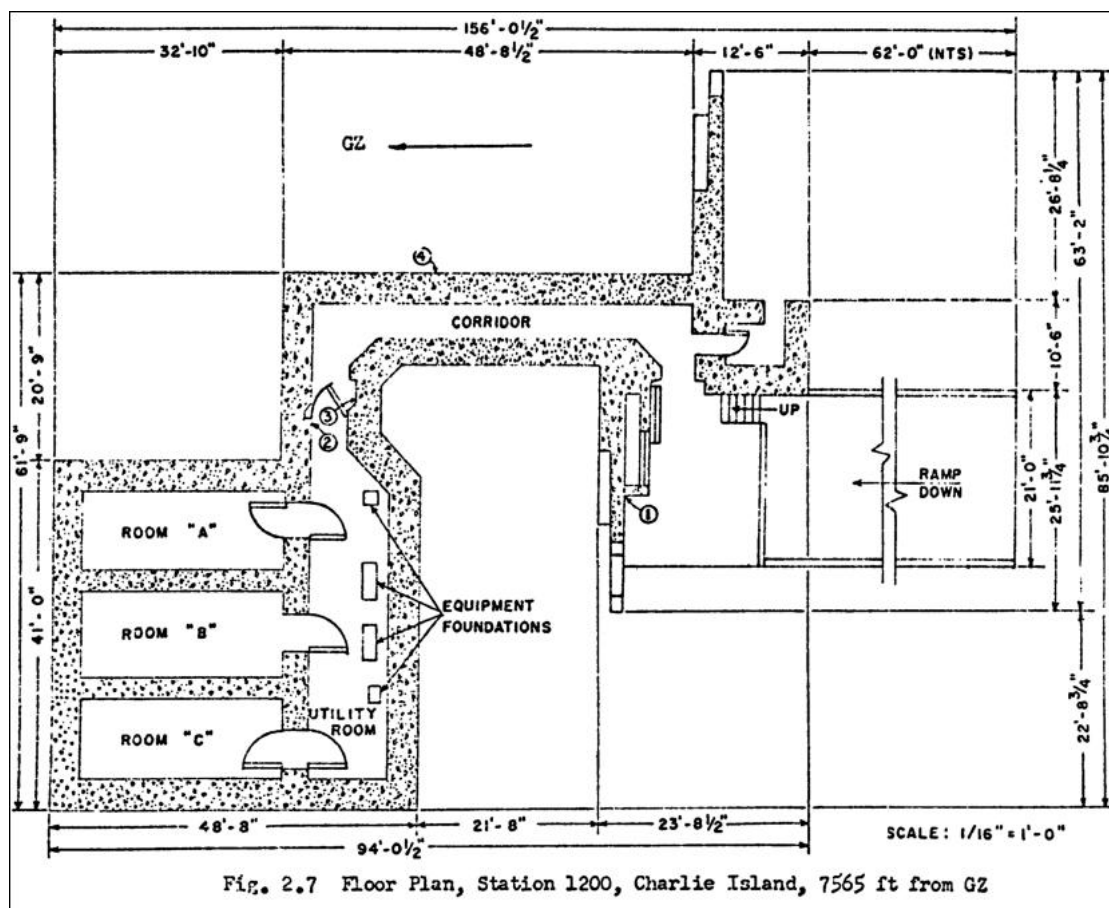
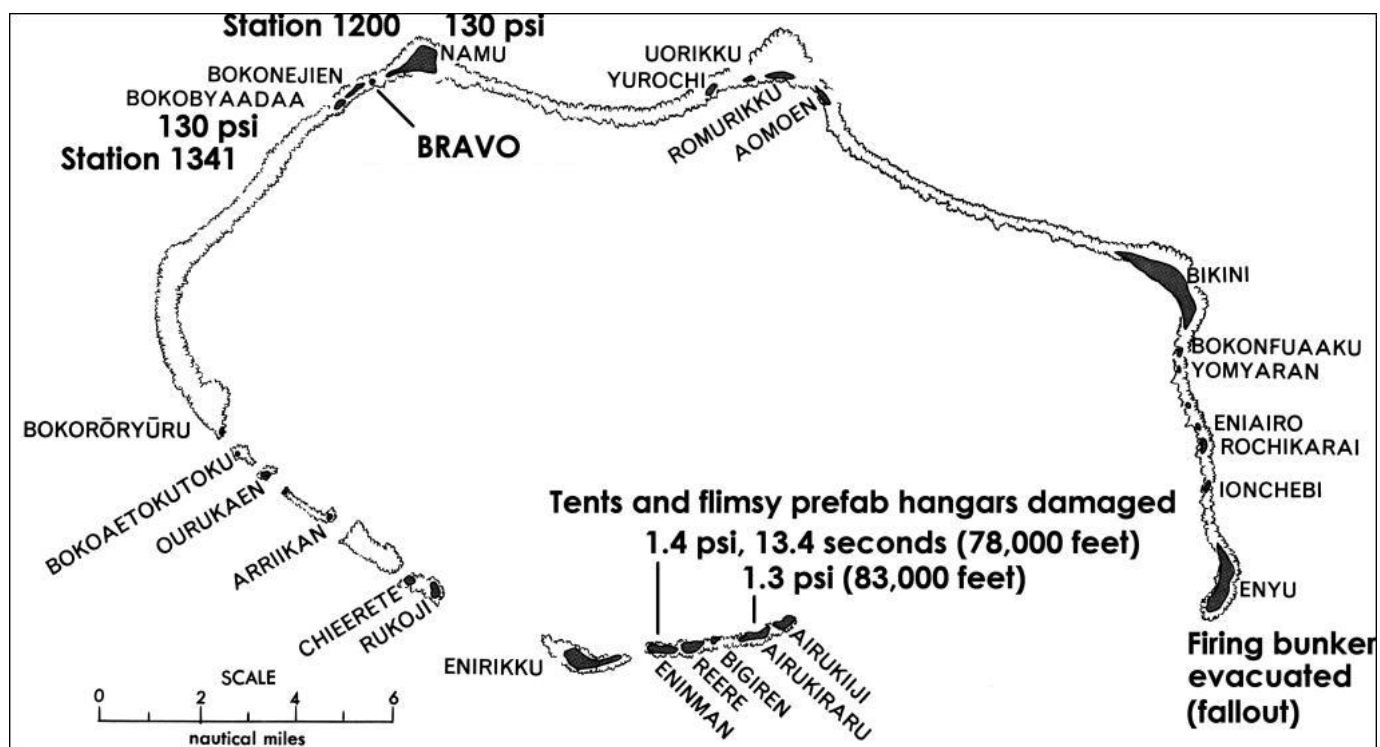
Still there today: Station 1200, 1.4 mile from Bravo...







Bravo pipeline end in shelter with 36 oscilloscope cameras to record radiation (station 1200 shelter, 11





The pipes along the causeway from the Bravo bomb to Namu (Charlie) island were Dr Sterling Colgate's experiment to measure Bravo's thermonuclear burn rate: piping collimated neutron radiation inside 12 vacuum pipes each of 15 cm diameter, extending 1.4 miles from the bomb to Station 1200 (the shelter located at the far end of Namu Island, still there today). These vacuum pipes, to minimise absorption of the collimated neutrons, replaced the Krause-Ogle helium-filled box used at the so-called "Ganex" GAMMA-Neutron EXperiment in the 1952 Mike test, where secondary gamma rays from neutrons striking Mike's steel case travelled through helium, arriving with little attenuation before the neutrons. The 14 MeV neutrons arrived at the detector before the tube was destroyed by blast near the bomb, and travelled faster than the lower energy neutrons, allowing the spectrum of the neutrons to be determined simply by using the time-of-arrival discrimination method.



Bravo 15 Mt bomb arriving at Namu Island on 20 Feb. 1954



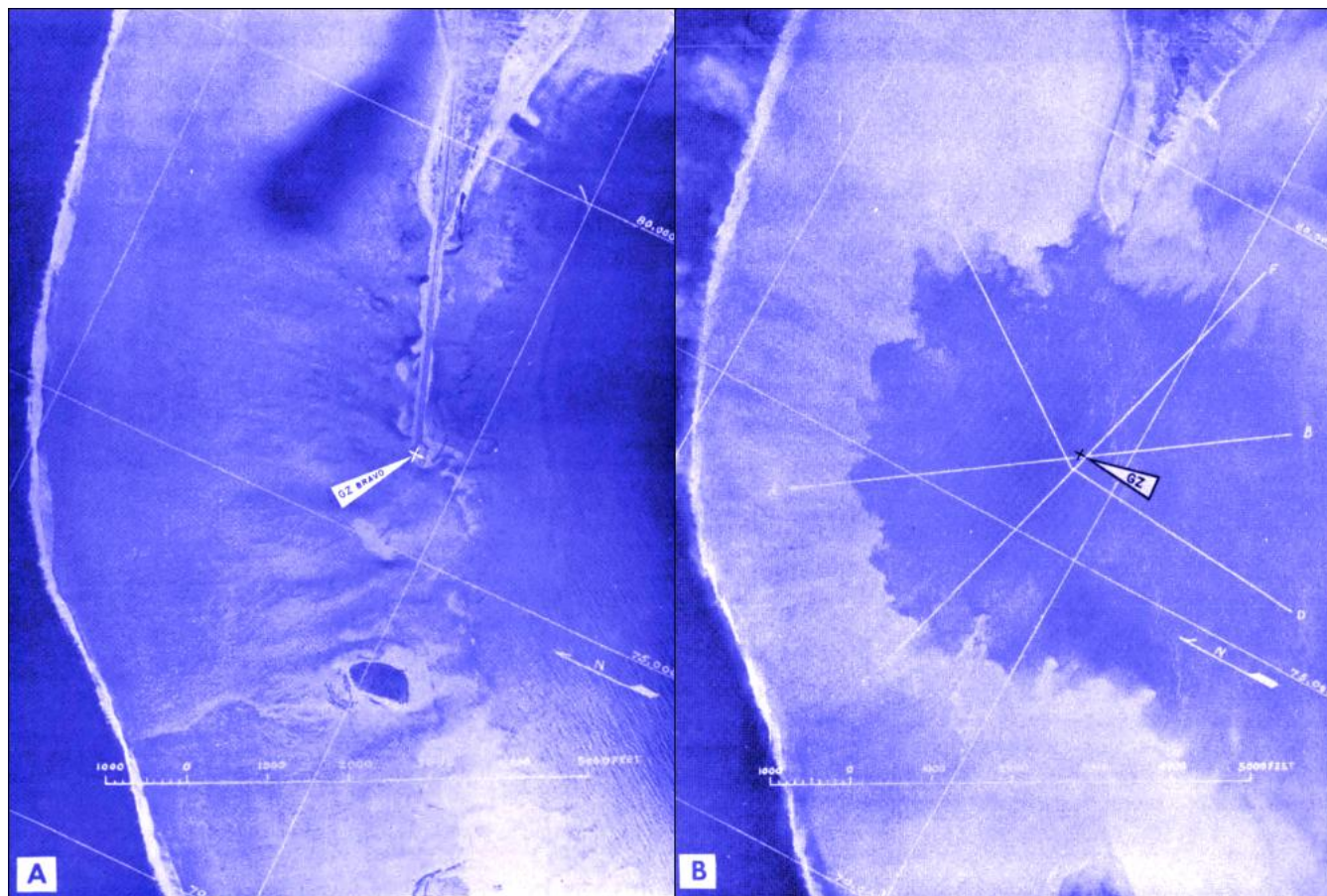
15 megaton ex

**Station 1200
2,286 metres**

Above: above ground shelter survived 130 psi peak overpressure and fireball engulfment from 15 megaton Bravo nuclear test. Station 1200 on Namu ("Charlie") island, Bikini Atoll, survived just 1.4 miles from 15 megaton Castle-Bravo nuclear bomb test, despite being designed to withstand only 50 psi from the predicted 6

megaton yield. This shelter was connected directly to the nuclear bomb by Colgate's 12 neutron-carrying vacuum pipes (seen extending to the bomb in the photo above). Bravo's predicted yield was 6 Mt, but was unexpectedly boosted by a factor of 2.5 when Li-7 (60% of Bravo's lithium) was fissioned into tritium by 14 MeV neutrons. Bravo's crater (before and after photos) is shown below and comes up to the edge of Namu Island, but Station 1200 was intact despite ground shock; please remember that **coral is easily crushed by the blast, unlike ordinary silicate soil, so craters on a city will be much smaller, even if you forget the error due to ignoring gravitational potential energy for excavating in the Glasstone and Dolan crater scaling laws.**

"This structure [Station 1200] proved remarkably resistant to very high blast pressures. ... The structure performed its mission despite an overpressure [130 psi incident peak overpressure, before more than doubling due to blast reflection], almost three times that for which the structure was originally designed." - **Wayne J. Christensen, *Blast Effects on Miscellaneous Structures, Operation Castle, Project 3.5, July 1955, Secret - RD, WT-901, page 27.***



Wayne J. Christensen explains in weapon test report WT-901 (*Blast effects on miscellaneous structures, Operation Castle, Project 3.5, July 1955, Secret - Restricted Data*) that Station 1200 on Namu Island (codenamed Charlie Island for security) at 7564 ft from Bravo, and Station 1341, a 3-storey above ground reinforced concrete building on Bokobyadaa Island (Able Island) at 7500 ft from Bravo, survived about 130 psi peak overpressure. *Castle weapon test report WT-934, Operation Castle, Summary Report of the Commander, Task Unit 13, Military Effects, Programs 1-9 (1959)* explains on page 61: "These shelters maintained their structural integrity, but failed functionally because of detail failure."

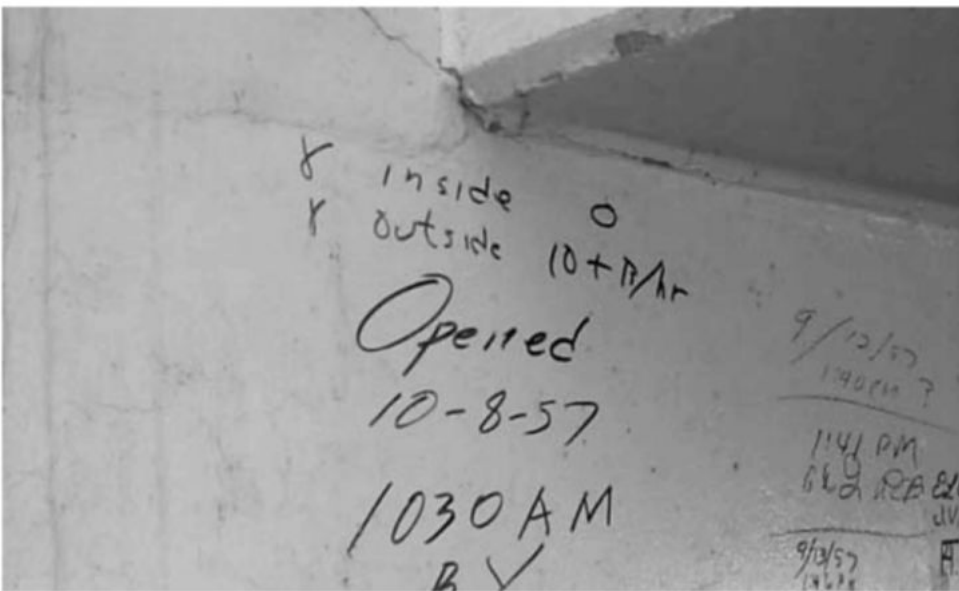
The detail failures were things like a blast doors (facing the blast) being forced into Station 1341. This blast door was however not shut but actually *open at the moment of explosion to allow instruments to observe the fireball growth*, and then a gadget tried to slam the door shut automatically just before the supersonic blast wave arrived (a feature that depended on the exact yield, because the arrival time is much faster than sound within the fireball radius). The easy swing-close door, designed for only 50 psi incident overpressure, was forced in by 130 psi from the unexpected 15 megatons yield of Bravo.

When the second shot of Castle, 11 megaton Romeo, was fired on a barge moored over the Bravo crater, it subjected Station 1341 to 95 psi peak overpressure which blew off the already cracked 3rd floor (see WT-1631 / AD 355505, page 21, linked here). But what do you expect after 130 psi from 15 megatons and then 95 psi from 11 megatons? The point is, the two lower floors of Station 1341 survived both multimegaton onslaughts. But Castle was only a start. **In 1958, 9.3 megaton shot Hardtack-Poplar subjected Station 1341 to 350 psi peak overpressure and a ground shock which caused a peak floor slab acceleration of 210 g's (210 times normal gravity), which sheered off the cracked 2nd floor (see page 33 of WT-1631).** But even then, the first floor survived! See photo at top; the thing is still at Bikini Atoll today!

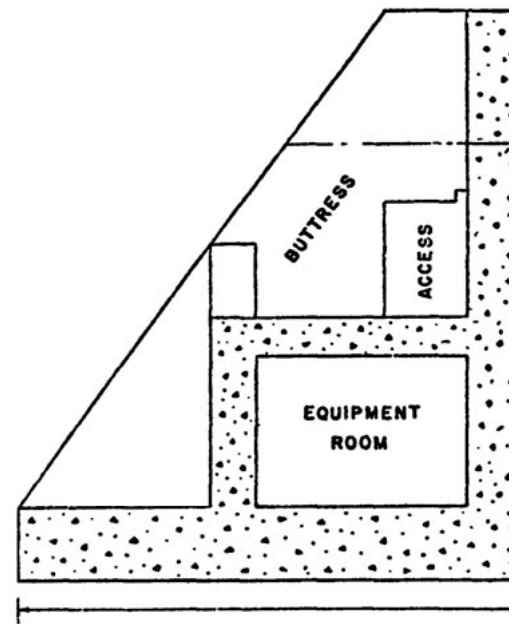
At Eniwetok Atoll, structures were torn down in 1979 during the decontamination process (most of the danger was from unexploded WWII shells remaining from the Japanese occupation of Eniwetok, not fallout). Photo below shows a typical shelter surviving intact after several H-bomb tests over on Eniwetok Atoll in 1977, before the clean up operation of 1977-9 (see the 1957 edition of Glasstone's *Effects of Nuclear Weapons* - not later editions - for the internal blueprint of a standard 100 psi peak overpressure nuclear tested shelter):



Shelter at ground zero, directly under 11 kt Fitzeau nuclear



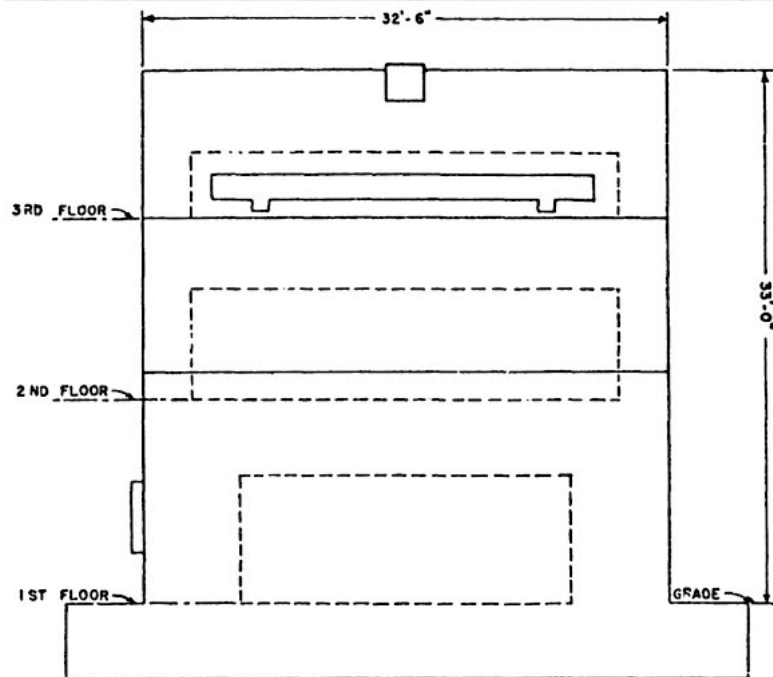
Test fired on 14 September 1957. Shelter was re-entered and outdoor (ground zero) dose rate was down to about 10 R/hr. The concrete shelter, which was protected by a steel dome. Shelter had 5 feet of earth cover, and was depressed 2 feet by the shock wave. (W. G. Johnson, A Historical Evaluation of the



Station 1341, Able Island, 7500 f

14.8 megator
1 March 1954

Station 1341
a three-story c
survived 7,500 f



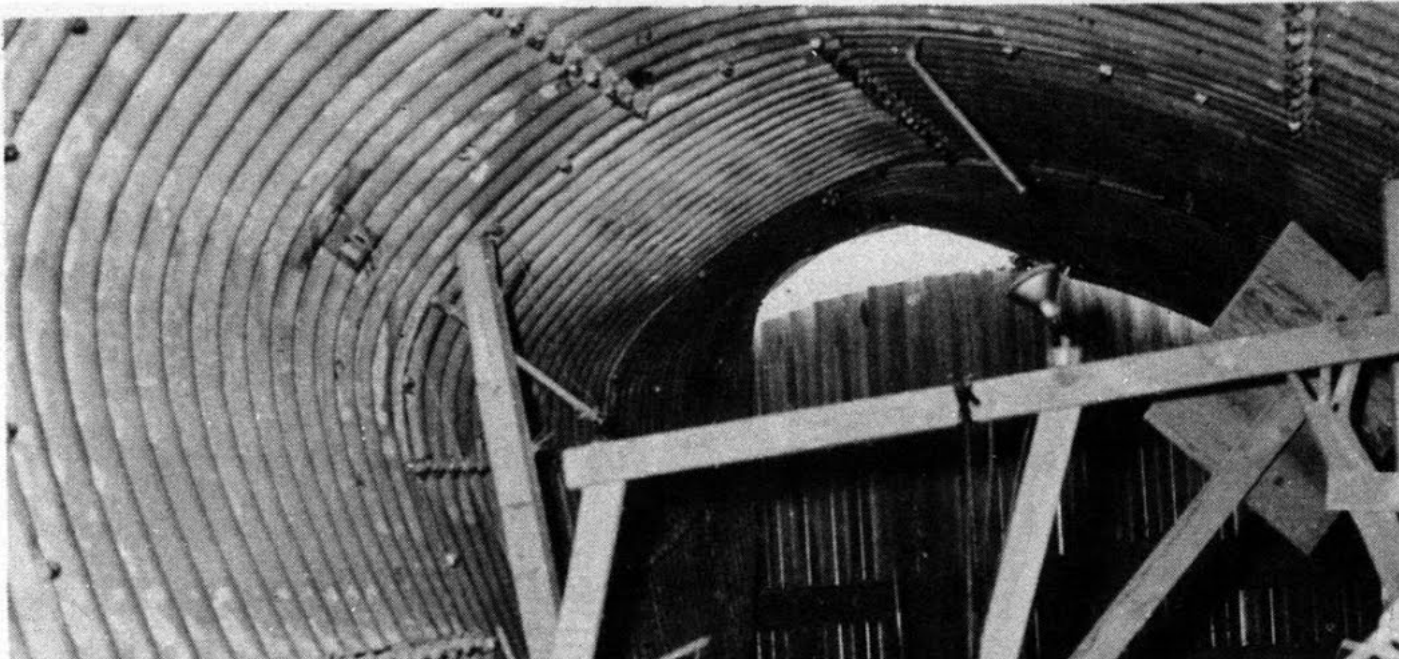
Station 1341, Able Island (7500 ft from GZ) Front Elevation



10.4 MEGATON MIKE TEST: 2.29 km, Rucc Station 520 concrete blockhouse survive

DAMAGE FROM AIR BLAST

Met ENW 57 structure 3.6 1500 ft GR Teapot MET
30psi op 170psi dynamic WT1128 PRECURSOR



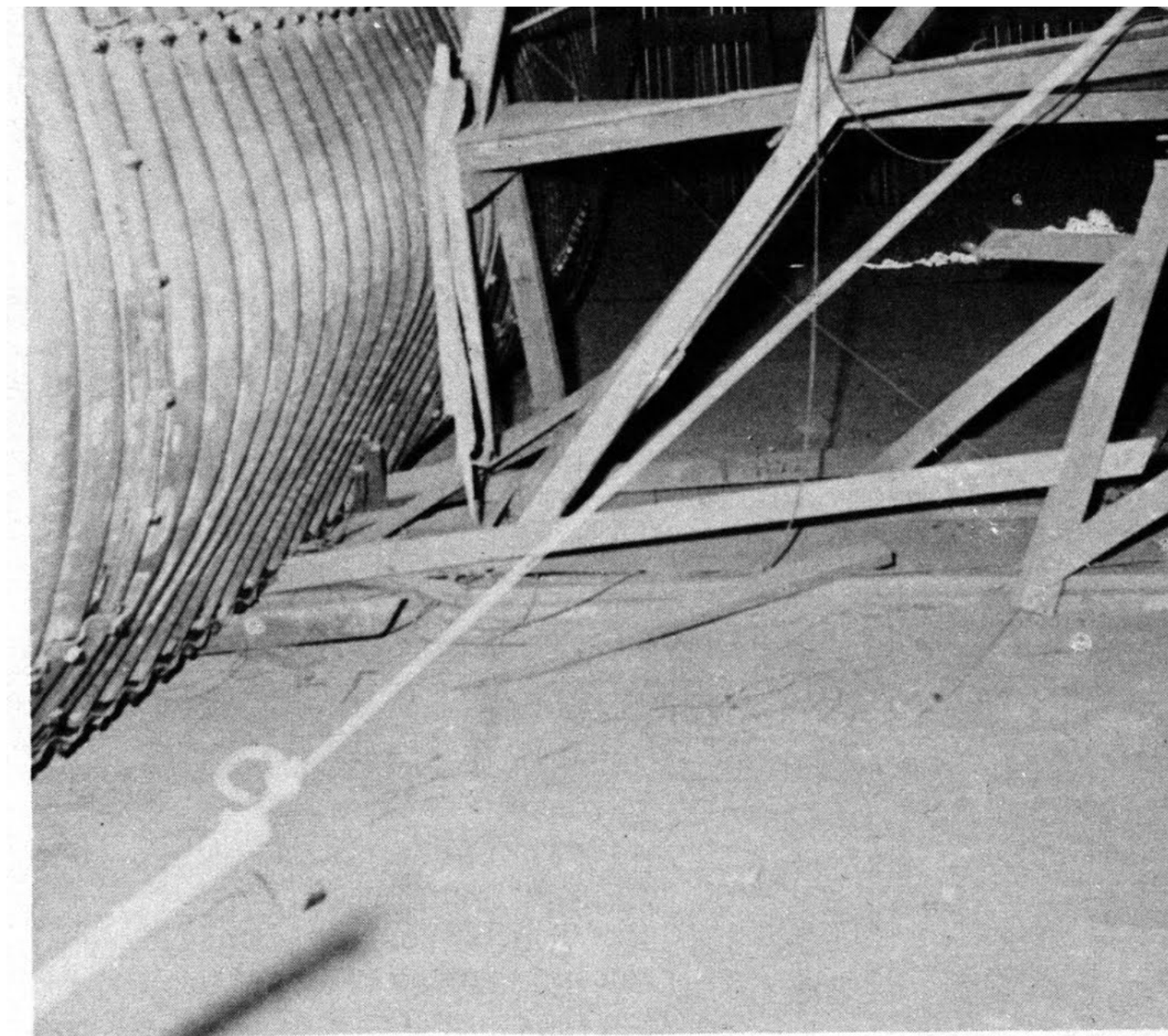


Figure 6.13. B-type damage to earth-covered 10-gage corrugated steel





Fig. 16—Lean-to at 7500 ft before blast.

Fig. 14—Lean-to at 3500

16.4-kt, 300-ft tower shot

No damage was caused to either shelter by the blast.

12

ADA074624

WT-801

CONFIDENTIAL (declassified in 1963)

EFFECTS OF AN ATOMIC EXPLOSION
ON UNDERGROUND AND BASEMENT
OF HOME SHELTERS

Joseph B. Byrnes

October

(b) Covered Trench Shelter at 1450 Ft from Ground Zero. See Fig. A.3 for details of this shelter. Thirty-three pounds of sand was added to the lower part of the male mannequin in this shelter in the same manner as previously described. The total weight of the mannequin, fully clothed, was 84 lb. Marks were made on the bench and roof slab of the shelter before the blast to locate the position of the dummy.

The mannequin was not moved or damaged by the blast. No damage to the shelter was evident. The roof slab showed no cracks and had no permanent deflection at midspan.

Concrete slab roof with 3 ft earth cover

(at the 1955 29kt Apple-2 test, a similar basement lean-to shelter at 4700 ft reduced 180 r initial gamma outside to just 6.7 r: Table 2.1 on p35 of WT-1218, May 1955, ADA073524, LJ Vortman, "Evaluation of Various Types of Personnel Shelters Exposed

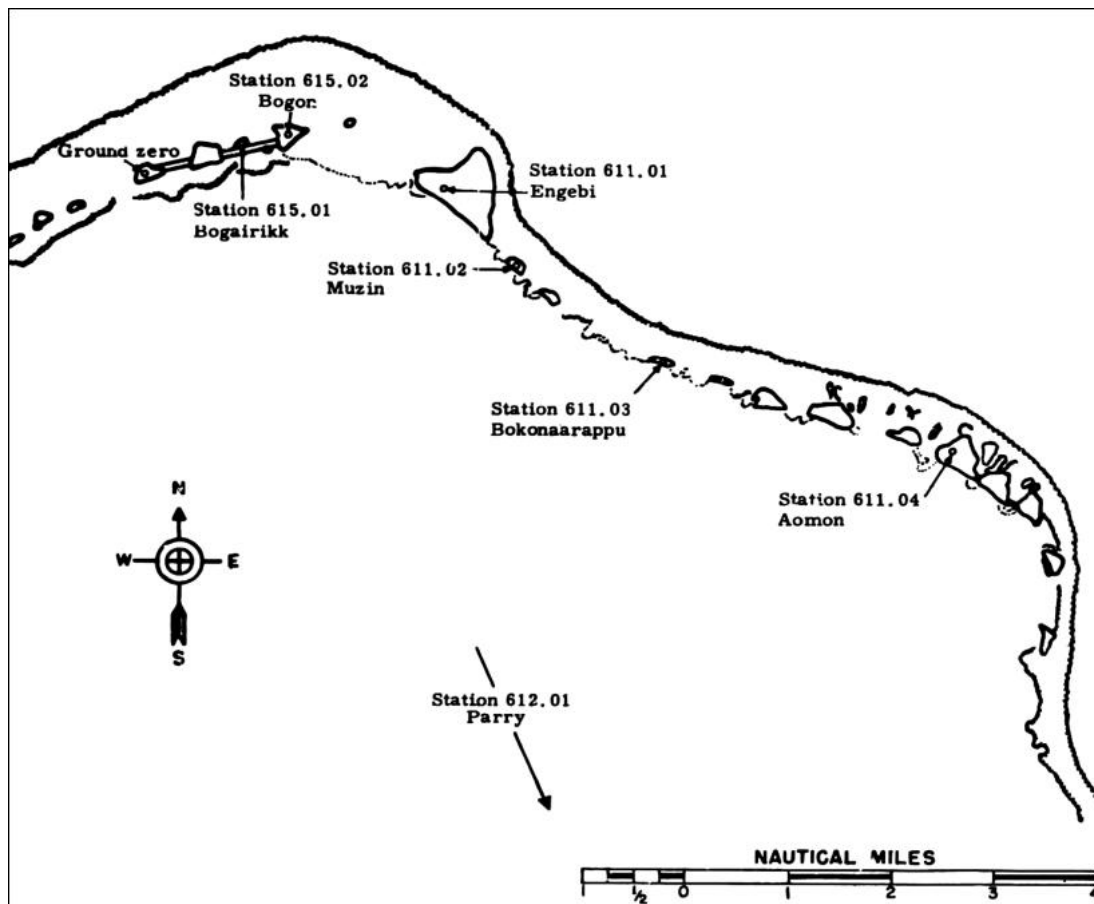
A SUMMARY OF UNDERGROUND AND EARTH-COVERED LOADING AND RESPONSE SYSTEMS SUBJECTED TO THE EFFECTS OF NUCLEAR WEAPONS DURING FULL-SCALE TEST OPERATIONS CONDUCTED 1951 - 1958, 31 August 1963, report DASA-1390, AD340311, previously Secret-FRD. This report lists all the nuclear weapons tests, the blueprints for the structures exposed at each, the distance and peak overpressure, etc., and the effects which resulted.

Since Bikini and Eniwetok atolls are relatively small, the higher yield tests repeatedly exposed instrument station structures left over from previous testing to further detonations, so that the effects of repeated blasts were ascertained. This is contrary to so much of the ignorance-based anti-civil defense propaganda which insists that nobody knows what repeated nuclear explosions will do to targets.

DAMAGE TO EXISTING EPG STRUCTURES, 17 October 1960, report WT-1631, AD355505, previously Secret-FRD, contains useful tables of the effects of repeated nuclear detonations on the testing structures at Bikini and Eniwetok atolls during the nuclear tests at those atolls, including the final tests there in 1958.

Wayne J. Christensen, *Blast Effects on Miscellaneous Structures, Operation Castle, Project 3.5*, July 1955, Secret - RD, WT-901.

What needs to be produced is a new summary of atmospheric nuclear tests, incorporating these detailed data on the effects of specific tests upon specific target structures.



Above: in the 10.4 megaton Mike nuclear test on Elugelab Island, Eniwetok Atoll, 1952, the rats (species *Rattus exulans*) of Engebi survived the heat, blast, and fallout as explained by Neal O. Hines in his book *Proving ground: An account of the radiobiological studies in the Pacific, 1946-1961*, dramatically on pages 143, 151, 209-212, and 297:

Page 143: "On ... November 8 [7 days after Mike] ... At Engebi the group went ashore on an island ... that had been swept by the blast and by the succeeding surge of water. ... survey meters indicated radiation was at 2 to 2.5 R/hr [about 1,000 R/hr at 1 hour after detonation, allowing for $t^{-1.2}$ fallout decay] ...

Page 151: "The exposure of Engebi to the effects of the Mike shot made it seem impossible that rats had survived. The view was expressed in a subsequent summary by [Frank] Lowman, who said that there was 'little probability that rats had lived through the heat, the shock wave, the rush of water, and the nuclear radiations that Mike had inflicted on the island. Members of the rat colonies apparently did live through the holocaust, however, and the questions presented by this circumstance would intrigue the investigators for years."

Page 209: "Their nests, composed of loosely matted grass stems, usually are built in burrows 6-12 inches below the surface of the ground, but occasionally the tunnels extend to 18-24 inches below the surface, or nests are found immediately beneath boards, slabs of concrete, or protective rubble. ... In 1955 the rats of Engebi were living on a treeless plain ... they fed on the seeds of *Lepturus*, *Thuarea*, and *Fimbristylis*, and on the leaves of *Triumfetta* and *Sida*, all common grass plants."

In 1954, the rats that of Engebi surviving Mike were exposed to the 1.69 megaton Castle-Nectar test, which is discussed on page 212:

"After the Nectar detonation concentrations [of I-131] in the thyroid were at levels considered excessive ... within 9 weeks activity in the thyroid was so low that measurement was difficult. ... most of the radioactivity in muscle was due to the presence of cesium-137, and no strontium-89/90 was found in that tissue. ... In January, 1955, the bones of rats contained strontium 89/90 in amounts approximating the maximum permissible dose, but no bone tumors have been discovered and none was found in specimens collected later."

Page 297: "The survival of the rats in the face of repeated atomic bombardment had seemed in 1955 a circumstance approaching the phenomenal. Even more so was the continued health of the colonies ... The case was important because it seemed to bear so directly on one of the broadest of the unanswered questions of the nuclear age, the effect on warm-blooded, vertebrate animals of continued exposure to low-level irradiation."

Average ^{137}Cs Levels (pCi g^{-1} Dry Weight) of Soil Samples and Plant and Animal Tissues Collected on Runit Islet (1967)*

	Distance from Cactus Crater, m				
	0	200	1030	1710	2460
Surface soil	34.4	10.8	2.4	3.7	0.5
<i>Scaevola</i> fruit	437.5	56.1	7.5	20.4	1.7
<i>Tournefortia</i> leaves	2174.0	76.8	49.0	30.4	2.0
Roof rat liver	2261.0	276.0	38.8	11.0	3.5
Roof rat kidney	5134.0	722.0	95.6	38.0	4.7

*Bastian, R. K., and W. B. Jackson, 1975, ^{137}Cs and ^{60}Co in a Terrestrial Community at Enewetak Atoll, *Radioecology and Energy Resources*, Special Publication, The Ecological Society of America, Fourth National Symposium on Radioecology, Oregon State University, pp. 314-320.

Above: the rapid fall in cesium-137 uptake by plants and animals with distance from the lip of the Redwing-Cactus nuclear surface burst crater in 1967 (twelve years later, in 1979 this particular crater was used as a convenient dump for contaminated soil and WWII munitions found during the Eniwetok Atoll clean up campaign, and then it was simply sealed up with a concrete dome).

Vaporization myths

Nobody has ever been "vaporised" by thermal radiation from a nuclear explosion, e.g. in Hiroshima even at ground zero you're talking about 100 calories per square centimetre in the open. Useful information: heat of vaporization of water = 2257 J/g = 540 calories/gram. Density of water or skin (70% water) = 1 gram/cubic centimetre.

Therefore, 100 calories per square centimetre (ground zero Hiroshima) is only enough energy to vaporize a layer of water or skin $100/540 = 0.185$ cm thick, or 1.85 mm thick.

In fact, even less will be vaporized because some heat is reflected by the skin, and some is absorbed by clothing. If clothing ignites, it can be extinguished easily by rolling it out. Remember, contrary to propaganda, thermally ignited clothing is easier to extinguish than petrol soaked clothing in peacetime car accident victims. The 1946 U.S. Strategic Bombing Survey report documents the fact that clothing ignition could be beaten out.

The main danger in cities is not from thermal radiation or fires, because modern city buildings absorb almost all of the thermal and much of the nuclear radiation. So the really widespread danger is flying glass and blast winds, which are dealt with by duck and cover on seeing the bright flash, which arrives prior to the blast wave.

posted by nige @ 9:46 pm 0 comments 

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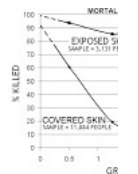
terrorists using a suitcase or in a defense is required to be effective at s

‘Paradoxically, the more you damage the farther out its the more can because in the power it covers where small n very large nur

- Peter Lauria
City Streets:
Inquiry into
Preoccupation
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‘The purpose is to save people [by] digging them out of themselves. ... leave the reader with a tangible – what of calories, room means in terms the human being think of the power writing for.’

– Dr Samuel Glasstone
letter dated 1962 to Colonel D. C. Chief, Weapons Division, U.S. Special Weapons Washington, and 4, concerning preparation of Nuclear Weapons



Glasstone and Glasstone, *The Effects of Nuclear Weapons* (1957) on page 546. distance in feet survival after 0.12 miles for concrete buildings miles for people outdoors. The median distance in modern cities in the open country factor of 11 to the difference thus a factor 120. Hence, modern city the casualty risks of being factor of 120 conditions, c

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From Dr Glasstone and
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ed., page 63
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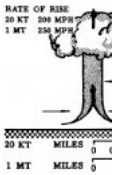
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February 1997 Department of Defense Special Agency 0602 Budget Item Sheet (R-2) that a revision and Dolan's Effects of Nuclear Weapons was budgeted

“FY 1997 Plan text to update book, *The Effects of Nuclear Weapons*, the reference for weapons effects the unclassified entitled, *The Nuclear Weapons*. Continue revision of Glasstone's *Effects of Nuclear Weapons* standard reference nuclear weapons. FY1999 Plan updated *The Nuclear Weapons*

The new publication is classified or unclassified or limited distribution (e.g., **Bridgman Introduction to Nuclear Weapons** which includes chapters on design to ensure radiation output calculated prevents up-to nuclear effects justify civil defense latest nuclear widely disseminated are printed for government a problem with that widespread understanding information for countermeasures



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- Defense Civ Agency, U.S. Defense, *DCI Environmen 3: What the Know About Spread*, repo June 1973, P:

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Samuel Glas J. Dolan, *The Nuclear We* 1977, pp. 61

‘From the early radiation-induced made with fruit Laureate Her other geneticists plants, who fed insect and plac mammals like June 1957 U. Hearings on frequency) of given population proportional to More recent of mice, however these conclusions revised, at least [*Mammals a closer to human to DNA repair than short-lived life cycles are have forced a development DNA repair a unlike mamm survive for development X-rays or gamma mutation frequency animals has been dependent on dose) rate ...*

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R/hour], the frequency in indistinguish spontaneous [Emphasis added] seems to be threshold be radiation-induced are absent ... mice ... a delay weeks between substantial dose either neutron and conceptual mutation frequency offspring to do ... recovery in members of the would bring a reduction in the mutations in subsequent generations.’

George Bernard explains group bias:

‘We cannot help are so constituted believe finally believe. The result believe something see all the arguments become blind against it. The to disbelieve a previously believed discover not a mass of evidence that this evidence in the face all

From the essay ‘Science?’ by P. Feynman, in the fifteenth annual National Science Association, 1968, pp. 31.

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A type Ia supernova always yields the same amount of energy, about 10⁵¹ megatons of TNT. The results from the study of the effect of the color of the supernova dwarf as soon as the color exceeds 1.4 seconds after the matter falling into the companion star. The electron gas is then no longer degenerate, the pressure of the gas, which causes the releasing of the potential energy, pressure to cause the carbon and oxygen elements, creating amounts of radioactive material, particularly in nickel-56, but also in other nuclides (including heavier) are a result of the 'R' (rapid) successive nucleosynthesis by fusion processes in supernovae. Type Ia supernovae occur every 400 years in our Milky Way galaxy. (The Chinese astronomer Shi Shen (c. 3rd century BCE) observed the sky (with the naked eye) and recorded the instruments) that in the constellation of the Crab today is still visible. The Crab Nebula through the Crab Nebula through the Crab Nebula diameter now is still expanding at 15 miles/second. The debris shock wave formation when the hydrogen gas compressing into a core with debris; but it is observed in the 300 light year of a supernova that when the forming 4,540 a supernova at 100 light year heavy radioactive wave expanding at 15 miles/second. Elements including iron and calcium in

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